Innovative socio-economic policy for improving environmental performance:

Payments for ecosystem services

Greening of Economic Growth Series

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

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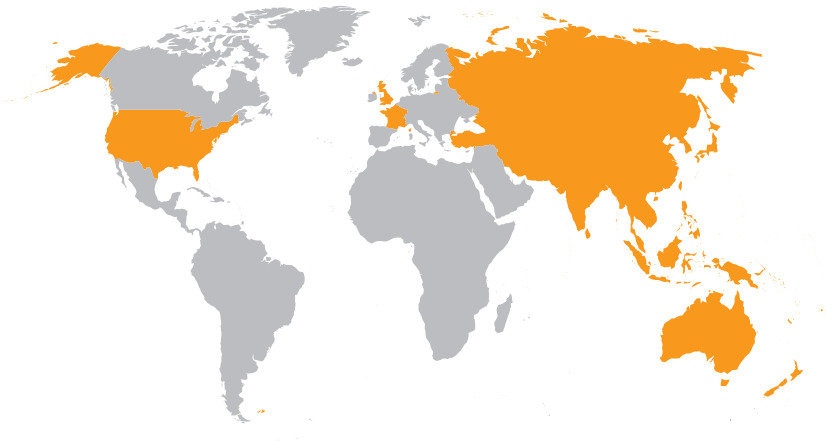

The orange areas of the map represent the members and associate members of ESCAP

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The greening of economic growth series

ESCAP, its partners and Asia-Pacific countries have advocated "green growth" as a strategy to achieve sustainable development in the resource-constrained, high-poverty context of the Asian and the Pacific region.

The conventional "grow now, clean up later" approaches to economic growth are increasingly placing the futures of regional economies and societies at risk. The forward-thinking policymaker is tasked to promote development based on eco-efficient economic growth and at the same time, record more inclusive gains in human welfare and socio-economic progress. In order to assist policymakers in responding to such challenges, ESCAP's activity on green growth has been developed to focus on five paths: sustainable infrastructure development; investment in natural capital; green tax and budget reform; sustainable consumption and production; and the greening of business and markets.

The ESCAP "Greening of economic growth" series provides policymakers with quick access to clear, easy-to-read guidance to specific "green growth" policy tools and actions. For more information please contact the Environment and Development Division at escap-esdd-evs@un.org and visit http://www.greengrowth.org

Abbreviations and acronyms

ADB	Asian Development Bank
ARBCP	ASEAN Centre for Biodiversity and the Asia Regional Biodiversity Conservation Programme
CSR	corporate social responsibility
ESCAP	Economic and Social Commission for Asia and the Pacific
FCPF	forest carbon partnership facility
GDP	gross domestic product
GHG	greenhouse gas
ICRAF	World Agroforestry Centre
LULUCF	land use, land-use change and forestry
NGO	non-governmental organization
PES	payments for ecosystem services
PFES	payment for forest environment services
REDD	reducing emissions from deforestation and degradation
RUPES	Rewards for, Use of and shared investment in Pro-poor Environmental Services
SFLC	sloping farming lands conversion
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
WCS	Wildlife Conservation Society
WWF	World Wide Fund for Nature

Contents

List of boxes

List of tables

List of figures

Introduction: Natural capital, ecosystem services, PES and the green growth challenge

For an economy to "grow green", investments must be made in natural capital. Natural capital provides both "direct" ecosystem services such as the provision of food and raw materials, and "indirect" ecosystem services such as carbon sequestration, watershed protection, aquifer recharge and biodiversity habitat provision (see box 1).

Ecosystem services support human economies and societies. They are usually irreplaceable, or can only be substituted for, at great cost. The savings achieved by protecting natural capital can provide convincing economic, in addition to the well-known environmental arguments, for sound environmental management.

Incentives for sustainable management of ecosystems through payments for ecosystem services, or PES can boost action on sound ecosystem management. Why are such incentives important? Although society benefits from ecosystem services - and also suffers when they are longer present - there is an opportunity cost associated with the provision of ecosystem services. More immediately profitable land uses, such as intensive farming, must be given up.

Through PES, beneficiaries of ecosystem services can prevent economic losses related to environmental change, support environmental conservation and boost incomes of land users, in a win-win approach. These kinds of incentives are not new in Asia and the Pacific. However, more formal approaches to PES strengthen the conditionality of the incentives. Payments or rewards should not be made, or stopped, when the services are not delivered.

The concept of environmental services supports the development of natural resources management strategies that explicitly benefit both the economy and society. PES allows the unpaid costs of environmental services to be reflected in the economy, thereby building a more eco-efficient economy. Policies to support PES also multiply the number of stakeholders who can become investors in natural capital, and expand the financing available for the management of key ecosystem services.

PES therefore fits within a "green growth" approach to sustainable development - synergizing economic growth with environmental protection. In this way, more sustainable and equitable patterns of economic growth can emerge. ESCAP is working with regional partners such as the ASEAN Centre for Biodiversity and the Asia Regional Biodiversity Conservation Programme (ARBCP), the World Wide Fund for Nature (WWF) Aceh Programme and the Rewarding Upland Poor for Environmental Services Programme of the World Agroforestry Centre Southeast Asia (RUPES-ICRAF) to support PES implementation and the sharing of experiences.

The growing numbers of Asia-Pacific PES programmes offers the practitioner considerable insight into the details of design and implementation. However, from a policymaking perspective, there is less experience with developing policy and institutional support that can engage a wide range of potential local, international, public, private, corporate and individual investors.

This overview will:

- Clarify PES and outline the potential value to policymakers
- Discuss the major challenges facing the implementation of PES
- Highlight selected Asia-Pacific PES schemes

Box 1 Ecosystem services

Ecosystem services are the benefits that people obtain from the dynamic interactions that occur within functioning ecosystems, between plant, animal, and micro organism communities and the non-living environment. While material wealth may provide a buffer against environmental change, the human species is fundamentally dependent on the flow of these ecosystem services.[1] The different types of ecosystem services society receives are outlined below.

Type of ecosystem service	Forests	Oceans	Cultivated Lands
Provisioning services	• Food • Fresh water • Fuel • Fiber	• Food	• Food • Fuel • Fiber
Regulating services	• Climate regulation • Flood regulation • Water purification	• Climate regulation • Disease regulation	• Climate regulation • Water purification
Support services	• Nutrient cycling • Soil formation	• Nutrient cycling • Primary production	• Nutrient cycling • Soil formation
Cultural services	• Aesthetic • Spiritual • Educational • Recreational	• Aesthetic • Spiritual • Educational • Recreational	• Aesthetic • Educational

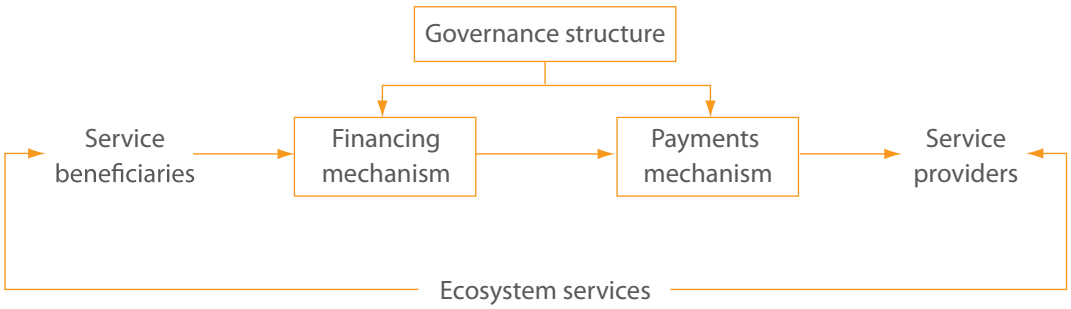
Source: United Nations Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: Synthesis* (Washington DC, Island Press, 2005).

What is PES?

The following is a popular definition of PES: "PES is a *voluntary transaction* for a *well-defined environmental service* (or a land use likely to secure that service), purchased by *at least one environmental service buyer* from *at least one environmental service provider*, if and only if the environmental service provider *meets the conditions of the contract* and secures the environmental service provision."[2]

In a PES transaction, the beneficiary from the ecosystem service makes a payment or provides another form of reward to the land owner or person who has the rights to use the ecosystem (land or freshwater, marine), for managing the ecosystem a way that secures an ecosystem services. This payment or reward should be conditional upon the "delivery" of the service. In practice it may be difficult to fulfill all of the conditions of PES, and it may not be necessary or appropriate to do so in some cases. As shown in figure 1, an intermediary governance structure is an important feature of PES mechanisms.

Figure 1 PES flow chart



Source: Pagiola, S and G. Platais, "Introduction to payments for environmental services", presentation at the ESSD Week 2005 – Learning Days, World Bank, Washington DC, 2005.

PES may be illustrated by the case of a hydropower company that pays upstream communities in its watershed to maintain forest cover. Payments made better watershed management enables the watershed to better provide the ecosystem services of reducing soil erosion and maintaining the regularity of the water supply. In this way, operational costs for dredging reservoirs are reduced, and the ability to generate electricity in the dry season is enhanced.

Although PES can be motivated by corporate social responsibility (CSR), CSR investments are not equivalent to PES. If there is no conditionality of payments, i.e. the payments are not stopped, when the agreed land management practices are not followed, then such a payment is more likely intended to facilitate good community relations than to invest in ecosystem services.

While PES falls within a category of policy instruments that can secure sustainable financing for protected areas, it is best deployed to provide incentives for sustainable land use management outside of protected areas.

Why is PES generating so much interest?

Since Costa Rica pioneered the first formally-labeled PES programme in 1996, there have been more than 280 PES programmes documented worldwide.[3] Despite the mixed results of these programmes, PES continues to generate interest for many reasons.

Declining supply of ecosystem services: Rising opportunity costs and population growth are resulting in land use change and declines in critical ecosystem services. The 2005 Millennium Ecosystem Assessment found that 60 per cent of the Earth's ecosystem services are being depleted at rates faster than they could recover.[4] The significance of this failure to humans has been reinforced through increased understanding of the economic, social and cultural value of these lost ecosystem services.

South-East Asia felt the effects of this first-hand with the arrival of the Andaman Tsunami in December 2004. In many places, severely-degraded mangrove forest left coastal communities exposed to the full force of the devastating waves. This caused far greater loss of life and social and economic hardship than would have occurred had the mangrove forest been present. The value of ecosystem services lost annually worldwide has been estimated at between US$ 2 and 5 trillion a year, as of 2008.[5] With populations and economies continuing to grow, the value of these increasingly scarce services is only going to increase.

Impacts of climate change: Ecosystem services are likely to become even more valuable as a result of the impact of climate change. Extreme weather events and degraded slopes combine to increase the likelihood of flash floods and landslides and. Droughts are also increasing in frequency and severity. Agriculture in particular may be impacted, with rice production dropping 50 per cent by 2100. The impacts of such changes are estimated to reduce the GDPs in South-East Asian countries by 2.2 to 6.7 per cent annually by the end of this century, a loss eleven times greater than the forecasted decline in global GDP.[6] Effective ecosystem management is being recognized as a way to counteract some of these rising costs.

Potential to capitalize on the value of services and generate sustainable financing: In 1997, in the first study of its kind, the total value of the world's ecosystem services was estimated at US$ 16-54 trillion annually. This represented a value of up to four times the global GDP.[7] By creating a way for service beneficiaries to recognize the value of these ecosystem services via monetary payments, PES creates potential for sustainable financing that complements public funding. Unlike traditional command and control approaches that rely solely on government funding, PES programmes can use private sector financing to help ensure long-term financial support.[8] PES can be used to leverage existing government funding to achieve greater results. The flexibility associated with PES design allows policymakers to mix public and private participation in a way that maximizes service delivery in each specific context. Box 2 outlines approaches to financing of the Costa Rican PES programme.

Box 2 PES financing: Lessons from Costa Rica

Since becoming alarmed at the rate of deforestation in the 1970s, Costa Rica has pursued a number of novel approaches to forestry management. The evolution of these management strategies ultimately led to their pioneering of a national level PES programme, facilitated by the recognition of ecosystem services in forest protection legislation in 1996.

The National Forestry Financing Fund was established to pay for the protection of these ecosystem services on behalf of the public. One third of a 15 per cent dedicated fossil fuel tax was allocated to the fund, but important funding gaps became evident, arising from the Ministry of Finance's control over government tax and allocation of PES tax revenues. In response, the legislation was changed in 2001, allocating a 3.5 per cent fuel tax directly to the PES programme. Even though this represented a 30 per cent reduction in the effective tax rate, revenue flows for PES increased.

In addition to the fuel tax, a 2006 decree established a charge for concessions for surface and groundwater use, to cover the costs of watershed protection through forest conservation. Rates vary by use; commercial and industrial users pay more than drinking water users and farmers, while hydropower companies and fish farmers pay the least. Large state companies have challenged the enforcement of this decree.

Revenue for PES was also generated through a voluntary payment programmes. Individuals and companies wishing to further their CSR programmes and/or reduce their carbon footprints were encouraged to make donations to fund PES programmes. Costa Rica's private hydropower companies, resorts, domestic airlines and the national soccer teams were among the first participants. An online airline-travel, carbon-offset calculator and payment system was also established. Combined, these programmes generate approximately US$2.4 million per year.

Initially it was hoped that international payments for carbon sequestration would become a major source of revenue for forest conservation programmes. However, with the exception of what is now characterized as a largely symbolic purchase by the government of Norway of 200 million tons of carbon sequestration for US$2 million, along with a few minor bilateral and philanthropic deals, no other major sale has occurred.

Development assistance has played a major role in advancing Costa Rica's PES programmes. World Bank financing and Global Environment Facility grants that began in 2001 now total more than US$80 million. Bilateral assistance has come from Kreditanstalt für Wiederaufbau Bank, the Norwegian Agency for Development Cooperation and the Government of Japan. Approximately one third of the PES programme revenue has come through these channels.

Costa Rica's PES programme illustrates that patience and perseverance are critical to the implementation of PES strategies. The programme has evolved over several decades, experiencing many challenges along the way. Moreover, PES programmes alone are not the solution to protecting Costa Rica's ecosystem services. Zoning and other regulations complement the programme.

Source: A. Sanchez, A. Pfaff, J. Robalino, and J. Boomhower, "Costa Rica's Payment for Environmental Services Program: Intention, Implementation, and Impact", *Conservation Biology* (2007), vol. 21, No. 5, pp.1165-1173.

Growing international markets for carbon sequestration services: PES is also gaining attention because of its link to the growing mitigation efforts associated with climate change. Deforestation is responsible for up to one fifth of global greenhouse gas emissions. Markets for carbon sequestration have facilitated payments for Reducing Emissions from Deforestation and Degradation (REDD) on a voluntary basis, and are growing. The expansion of markets for carbon sequestering ecosystem services could have very significant local impacts. For example, the World Bank estimates that Indonesia alone could earn up to US$ two billion a year in such a forest carbon market.[9]

As a result, there is a desire among policymakers to understand PES mechanisms in order to ensure that such programmes are implemented in ways that maximize the benefit for local communities, but also to enhance the attractiveness of their countries as destinations for carbon investments. The Indonesian province of Aceh is an early player in the commercial REDD marketplace, placing significant emphasis in supporting its ban on commercial logging through carbon finance. An agreement with one Wall Street investment firm could earn Aceh province several million dollars to protect 750,000 hectares of high value conservation forest. The firm has assessed that money invested in Aceh will be a source of inexpensive carbon credits that will become more valuable in the future. Box 3 discusses REDD further.

Box 3 REDD and PES

As part of climate change mitigation efforts, developed countries may be able to offset their carbon emissions in the future, by paying developing countries to protect and enhance their forests. Markets for emission reduction credits from Reducing Emissions from Deforestation and Forest Degradation (REDD) are anticipated to generate a US$30 billion annual revenue stream for developing nations, stimulating an exponential increase in demand for carbon sequestration services from South-East Asian forests in particular.

In 2008, the World Bank launched the Forest Carbon Partnership Facility (FCPF). In addition to helping to build capacity for REDD in developing countries, the FCPF also supports the implementation of small-scale REDD pilot projects. Cambodia, Indonesia, the Lao People's Democratic Republic, Thailand and Viet Nam are among 37 which have partnered with the FCPF in the development of national REDD Readiness Plans.

Despite the growing interest and investments in carbon markets, significant uncertainty exists. Numerous studies warn that once REDD is implemented, the sheer volume of available forest supply could send the market price for tradable carbon tumbling, possibly as much as 75 per cent.[10] Investments in REDD projects could also be subject by the same risky investment patterns and flows that launched the 2008 financial crisis. The value of REDD carbon credits could also decline significantly if REDD projects fail to produce their anticipated level of avoided deforestation, whether by project, by country, by region or globally.

Box 3 REDD and PES (Cont.)

There are both strong supporters and detractors of international payments for REDD. On the one hand, some agree that financial compensation is an equitable solution and the only effective way to protect forests. On the other, REDD is also generating significant controversy among some forest communities and indigenous peoples' groups who fear loss of livelihood, cultural practices and access to lands, as a result of the uncertain obligations and standards of forest protection. These risks are especially important where land tenure is insecure and therefore vulnerable to acquisitive commercial interest.

Given the growing role REDD is likely to play in international efforts against climate change, there is an urgent need for countries to address these challenges. One way to do this is to start building regulations and institutions to direct and support REDD implementation in a way that is favourable to each country. Indonesia has already started this by passing three key pieces of legislation that outline REDD approval and implementation procedures as well as REDD revenue sharing guidelines.

Countries can also help to address these challenges by increasing their capacity and understanding of PES principles. In practical terms, countries can start with locally-generated investments in ecosystem services that are important to local buyers. This approach reduces uncertainty and risk related to internationally regulated markets and prices.

REDD benefits-sharing mechanisms are a specific application of PES. Therefore, the more experience a country has with PES, and the more institutional and regulatory support that exists to support PES, the more likely that these countries will be able to maximize local benefit from this new source of income.

What does PES bring to the policy table?

There are several specific benefits that the implementation of PES schemes offers to policymakers.

Flexibility and adaptability: While PES programmes have certain characteristics, they can be flexibly designed to adapt to project-specific variables and objectives. This adaptability is highlighted in a quick survey of PES programmes in Asia and the Pacific in Appendix A. Everything from the objectives of the PES programme (see table 1), to the ecosystem services under contract (see table 3), to the form and method of compensation (see table 2), to the method of pricing, to type of ecosystem service market (whether publicly supported, formal regulatory and voluntary markets, or self-organized, local private deals) provides an opportunity to incorporate specific considerations and desired outcomes into policy and programme design.

Examples of objectives of PES programmes that, if adopted, would reflect Viet Nam's demand for ecosystem services, socio-economic and biogeographic contexts, is provided in table 1.

More effective land-use planning and zones: Land use plans, especially where zones are demarcated for environmental protection, are notoriously difficult to enforce. PES incentives can work hand in hand with good land-use planning to achieve compliance. PES has been strategically used to develop biodiversity corridors between protected areas and to build buffer zones at the margins of protected areas, as well as to reduce erosion on river banks.

Smart infrastructure investments: There is growing evidence that protection of natural infrastructure such as watersheds, can be a smarter investment that man-made infrastructure. In the 1990s, for example, the city of New York was faced with new federal water quality standards. A choice was made to invest in ecosystem service contracts with land owners from the upstream Catskill-Delaware watershed rather than in traditional water treatment plants. This investment saved more than $1 billion and resulted in a more eco-efficient solution. Such investments have also proven successful in Asia, for example in the Republic of Korea.

Poverty-reducing potential: By creating an opportunity for land owners to transform natural capital into financial flows, PES can provide local people with greater financial flexibility, helping them to reduce their vulnerability by diversifying their sources of income.[12] Furthermore, as highlighted in table 2, because payments do not need to be direct cash transfers, payments in the forms of infrastructure such as schools, road, irrigation systems or health clinics can be used to deliver significant benefits to the community as a whole. Benefits to the poor can also go beyond additional income or rewards. PES schemes can assist in resolving land tenure issues, develop new skills and sharing more productive and sustainable land management practices, all of which, if implemented carefully, have a great potential to improve the livelihoods of the poorest and most vulnerable communities.

Table 1 Potential strategic objectives for PES development – illustration for the case of Viet Nam[11]

Relevant national policy objectives	Potential strategic objectives for PES development
Water and hydroelectricity provision	
• Ensure the provision of water of adequate quantity and quality, throughout the year • Ensure the provision of adequate supplies of electricity throughout the year	• Maximize stakeholder investment in forest environmental services related to hydrological cycle hydrological environmental services • Target intensive water and hydropower energy users for mandatory payments as well as water and hydro power providers • Enable targeted direct and voluntary investments to supplement PES payments in areas with high opportunity costs • Enable protection of key wetlands by PES investments • Facilitate cross-provincial PES arrangements, where provinces share watersheds or benefit from watersheds in other provinces.
Tourism development	
• Expand tourism development, especially ecotourism and "green" tourism • Promote cultural tourism	• Enable PES investments from, and into, the tourism sector • Enable rural communities to use PES to access capital to support community ecotourism development. • Tap into increasing demand for nature-based tourism • Increase voluntary investments.
Climate change mitigation & adaptation	
• Reduce GHG emissions from all sectors, including land use, land use change (LULUCF) • Adaptation to climate change • Increase and improve carbon sequestration, including via biological sinks • Promote renewable energy	• Enable GHG-intensive industries (e.g. coal-fired plants) and activities (e.g. international tourists) to directly invest in afforestation/ reforestation • Position Viet Nam as an attractive investment location for carbon finance in the future and eliminate local stakeholder risks • Enable mitigation activities via land use notably forestry (to reduce emissions from deforestation and degradation, but also to promote forest enhancement via sustainable forest management) • Promote investments in environmental services as an adaptation measure (e.g. flood and erosion prevention measures)
Forest management & conservation	
• Promote sustainable management and use of forest resources • Ensure financial sustainability of protected area systems • Promote social forestry	• Increase access to capital by those who are managing forest lands, in particular economic organizations, but also communities and individuals • Strengthen buffer zone protection and link protected areas • Promote community-based forest management
Rural Livelihoods	
• Poverty alleviation	• Increase income and livelihood opportunities for the poor • Enable revenue-sharing mechanisms with protected areas in exchange for conservation

Table 2 Examples of alternative methods of compensation for ecosystem services

Pay with strengthened land use rights	Granting recognized land use rights in exchange for sustainable management practices
Pay with cash and increased access to capital	Increased access to microfinance credit based on future payments.
Pay costs of forest establishment or forest protection	Compensating for the costs of protecting or regenerating forest areas. Payments made on per tree basis, or by area, depending on objective.
Enable more profitable and sustainable land management	Funding extension services, tree nurseries, market infrastructure, community-based forest enterprises, and other such support services for individual producers (or forest protectors) who will then gain financially by participating in new land-use activities or sharing income from forest protection.
Pay communities with improved services	Providing services, such as health clinics, education, or enhanced right to resources (land, forest, grass, and water) that improve household or community welfare. It is however difficult to rescind such forms of payments if communities fail to live up to their obligations.

Source: Adapted from Forest Trends, The Katoomba Group and UNEP, *Payments for Ecosystem Services: Getting Started: A Primer* (Washington DC, Harris Litho, 2008).

Additionality through conditionality: The main reason for service buyers to participate in PES programmes is the understanding that they will secure services that are threatened in some way. Either additional services will be provided (for example when an area is reforested), or maintained (for example when existing forests are protected) when they might not have been otherwise. Because payment is conditional on this additionality, PES motivates service providers to meet their end of the contract. PES also motivates service buyers to take an interest in monitoring and enforcing the agreement. The conditionality of PES payments can encourage a wide range of direct beneficiaries of ecosystem services to take an interest in investments via PES. The costs of these investments can be passed on to end-consumers or indirect beneficiaries (see table 3), who are often more willing to pay than might be expected, even in developing countries, when there is an element of accountability.

Table 3 Commonly-marketed ecosystem services and their beneficiaries[13]

Ecosystem services	Direct beneficiaries/users	Indirect beneficiaries/users
Hydrological services	• Water utilities • Hydropower producers	• Water users – all economic sectors • Hydropower users – all economic sectors
Scenic/landscape beauty	• Enterprises providing eco-tourism and nature-based tourism – related services	• Wider public • Tourists
Biodiversity support	• Bio-prospecting interests (drug firms) • International conservation interests • Enterprises providing eco-tourism and nature-based tourism – related services	• Drug producers • Individuals – international • Tourists
Climate regulation services (carbon sequestration)	• Investors in carbon markets • Greenhouse gas (GHG) emitters	• Non-hydropower, non-renewable energy users in all sectors • Global community

What are the main challenges of PES design and implementation?

PES is a rather elegant approach, in principle, but in practice, developing and implementing PES projects can be very challenging. Box 4 outlines the four main steps to developing a PES programme. Several challenges are outlined below:

Ensuring the integrity of the payment scheme: The primary objective of PES incentives is to secure the flow of specific ecosystem services. However, because payments are made to the public, PES programmes can be susceptible to "hijacking" for political purposes. Payments may be diverted to specific persons or areas to support political or other objectives. It is therefore important to define transparent principles and criteria for eligibility for payment that are publicized and defensible from a biogeographic standpoint, rather than based on political considerations.

Table 4 Examples of targeting policy

Country	Eligible groups	Targeted ecosystem service	Targeted ecosystem types
Indonesia - Cidanau	Land-owners in located in upper watershed	Regulation of hydrological function	Agro-forests
Indonesia - Lombok	Communities around water utility intakes	Regulation of hydrological function	Forests, agro-forests
Mexico	Private and community lands with highest deforestation risk	Regulation of hydrological function	Cloud forests, forests
Viet Nam	The Management Boards of protection and special use forests, economic organizations managing production forests, households and individuals living in these areas, and village communities	Regulating of hydrological function and soil conservation, and scenic beauty	Forests
Costa Rica national PES	Mixed High conservation values	One bundle of services which includes hydrological services, scenic beauty, carbon sequestration and biodiversity services	Forests

Getting public participation and support: Early and extensive communication with key stakeholders can help overcome challenges, avoid misunderstandings and increase participation. Communication media such as radio and television, as well as local institutions, including government and NGOs, as demonstrated by Viet Nam's experience, are valuable communication channels. The growing numbers of PES programmes in the region are also valuable resource on which to draw understandings and exemplify applications.

Securing buyers' confidence: The conditionality of PES programmes is often the key motivation for buyer participation. Therefore, the confidence that their investment will pay off is very important to ensuring the sustainability of PES programmes. There are, however, two key challenges PES programmes face in achieving this. Governments have played, in some places, a central role in administering PES programmes, and buyer confidence can be heavily influenced by confidence in the governments themselves. Mechanisms to ensure transparency of the use of funds are extremely important to secure buyer confidence. While some payments are motivated by corporate social responsibility, some buyers require more scientific certainty that ecosystem services are being delivered. In this kind of market, more scientific support in establishing baselines will be needed. Where taxpayer funds supplement private payments, government accountability requires greater attention to transparency and monitoring.

Securing land tenure arrangements: Secure and formalized land-use rights is important to the success of PES programmes for two reasons. First, because service buyers are paying for a service that is dependent on specific land use practices, they will want to be certain that they are entering in a contract with those who are able to determine land use over the long term. Second, because ecosystem services often involve a considerable investment, for example planting trees, service sellers are unlikely to participate unless their rights to the land are strong enough to guarantee that their investment will not be lost. This reluctance has been seen by the forest communities in Northern Thailand who have opposed payments for carbon sequestration citing concerns about unresolved land tenure arrangements. Early PES-related schemes in Viet Nam faced similar difficulties.[14]

In many parts of Asia insecure land tenure or traditional land ownership remains common in and around areas containing valuable ecosystem services. For example, only 30 per cent of Cambodia's land has been officially registered, with the remainder under varying degree of state ownership. There are a number of ways of addressing these issues. The RUPES-ICRAF programme has strengthened land use rights in return for more sustainable land management.[15] No matter what solution is used, it is important to ensure that the prospect of a PES deal does not stimulate "land grabs". The increased value that PES programmes bring to land, can motivate people to use force or corruption to gain control of it. This has the potential to increase insecurity of tenure and access to land by vulnerable groups.

Achieving fair outcomes: Equity is an important consideration in programme design. A key challenge to achieving fair outcomes is overcoming existing inevitable inequalities in the design process. While PES transactions are by definition voluntary, it does not necessarily mean that those volunteering have sufficient information and understanding to ensure they are not taken advantage of. In all but the rarest circumstance, buyers in PES programmes will have the upper hand in the transaction, possessing more knowledge, experience and resources than the rural service providers. Such an environment is ripe for communities and landowners to unknowingly enter agreements that are, intentionally or not, structured in the buyers' favour. Any inequality in design is magnified by the fact that if contract disputes should arise, landowners would be unlikely to match the litigation resources available to the buyer.

Donor agencies, NGOs and academic institutions can play an important role in providing expertise, capacity or even acting as intermediaries that can help sellers to assess the ecosystem product. These actors can also assist with establishing relationships with buyers, enabling sellers to get to know buyers well, and ensuring that agreements are in the seller's best interest.[16]

Box 4 Stages of PES Development

Stage 1: Identify the demand, set objectives and determine values

- Review socio-economic context, demand for specific ecosystem services from specific potential buyers (commercial and individual)

- Define, measure, and assess the specific ecosystem services, identify current and future threats

- Determine whether PES is the right policy instrument, and what other instruments will be needed

- Set objectives

- Determine economic and marketable values through environmental valuation

Stage 2: Assess institutional & technical capacity and feasibility

- Assess legal, policy, and land ownership context

- Examine existing policy related to PES – land users should be able to receive payment, buyers to make payments (and if mandatory charges, fees or taxes, are used, they should be accessible to the PES programme) for example.

- Survey available PES support services and organizations

Box 4 Stages of PES Development (Cont.)

Stage 3: Establish institutional and contractual frameworks

- Design management, business and communication plans
- Determine institutional framework based on existing institutions, seek other ways to reduce transaction costs, build capacity as needed
- Determine effective and equitable payment approaches based on socio-economic and socio-cultural context
- Prepare model contracts, other operational documents

Stage 4: Implementation

- Communication, marketing, negotiation and registration of contracts
- Operationalize monitoring and verification
- Operationalize financing and payments

Source: Adapted from Forest Trends, The Katoomba Group and UNEP, *Payments for Ecosystem Services: Getting Started: A Primer* (Washington DC, Harris Litho, 2008).

Ensuring organizational coordination and support: Natural resources are often managed by multiple agencies in many countries. Land use planning may be the responsibility of one agency, while water supply the responsibility of another. The success of PES programmes depend on successfully coordinating the policies and efforts of relevant authorities. PES programmes face two key challenges in achieving this. The first challenge is ensuring the coordination of policies and efforts of all the authorities *directly* involved in the PES programmes themselves. This coordination is needed to ensure that the components of the PES programmes, for example, financing, contracting, and monitoring, are all effectively working together. Because PES programmes often involve more than one level of government, for example national, regional and local, as well as more than one authority within each level, for example ministries and departments of environment finance and planning, ensuring this coordination can be challenging.

The second coordination challenge is ensuring that objectives are coordinated and supported by the larger environmental management context. This coordination is needed to ensure that PES objectives are not compromised by contradictory policies or efforts. An example of the effects of a failure to achieve this coordinated support can be seen in a PES programme in one South-East Asian country which paid villagers to guard endangered hornbill nests. Despite the programme having strong public buy-in, as a result of the government's failure to support its own logging ban, the trees themselves fell victim to logging pressures from other community members. Thus while birds were saved in the short term, the continued loss of habitat led to a failure of the programme in the long term.

There are several measures that can be taken to address these coordination issues. First, governments can help by being clear on the level of institutional support they are capable of offering PES programmes. By doing this, governments help to ensure that the scope of PES programmes stays within viable limits. Credible research must be undertaken on existing drivers of land use change and related policies. Where practical, key agencies should be involved in the development of PES policy and mechanisms from the initial stages of planning and research.

Also, as the Costa Rica experience has shown, PES implementation can have a steep learning curve, and approaches need to be adjusted along the way. However, a growing number of financial and technical assistance resources are becoming available to aid South-East Asian countries in assessing the development of national PES strategies. Viet Nam, Indonesia and Indonesia's Aceh province are putting this assistance to use to both deploy individuals PES projects and in the development of policies and programmes.

Finding the economic value of ecosystem services: The economic valuation of ecosystem services provides the basis for determining the payments made and received by services buyers and providers. While there are several approaches to determining these values, each with its specific strengths and weakness, any approach should be based on local contexts. Where there is significant capacity with respect to valuation methodology, it is more difficult to find expertise with experience in its practical application for PES, thus the development of local expertise and capabilities is needed if PES is to succeed.

Ensuring 'real' additionality: PES programmes should be able to demonstrate that they are cost-effectively providing ecosystem services that would not have otherwise been provided, i.e. that there is real "additionality." This means that there should be a high degree of certainty that the improvements in ecosystem management are attributable to the PES programme. It also means that the services should not be lost to deteriorating ecosystems elsewhere, as environmental pressures (for example from logging activity) move from an area protected via PES, to an area which is not protected. This situation, known as "leakage", only has real significance to a PES programme if the area where ecosystem services deterioriate, is important for the provision of the ecosystem services. If a critical watershed is protected via payments for hydrological services, and logging activity moves out of the critical watershed, then the desired ecosystem services in that watershed are still secure. However, the issue of leakage becomes more important in the case of carbon-sequestration. In this case, it does not matter where the loss or degradation of forest cover takes place, a net loss of forest equates to a net loss of service.

Limiting transaction costs: Transaction costs are all the costs associated with setting-up and managing a PES programme. These include the costs of monitoring, negotiation, payments to staff for enforcement, capacity-building and communication. In some cases these costs can be significant, for example, a review of carbon sequestration schemes in various developing countries shows transaction costs with a range of 6 – 5 per cent of programme costs.[17] In general, these costs are highest when multiple PES actors are involved, when institutions and property rights are weak, and when the costs of monitoring of land use are high.[18]

High transaction costs divert money away from the direct contracting of ecosystem service provision, and consequently reduce the amount of services that a given budget can acquire. If transaction costs are added to the amount charged to service buyers, it can reduce the demand for these services. If transaction costs are borne by the service seller, they reduce the willingness to participate.

There are a growing number of technical ways to reduce transaction costs. Tools such as the internet are increasingly being used in innovations that make it easier for service buyers and sellers to communicate. NutrientNet is such an example which uses the internet to facilitate interactions between service buyer and seller and provide supporting information and tools.[19] Technical innovations in assessment tools are also offering new ways of lowering transaction costs. For example, rapid appraisal techniques developed by RUPES-ICRAF facilitate cost-effective gathering of data to support the design of PES projects.[20]

A second approach taken to limiting transaction costs is through institutional innovations. These consist of organizing programmes in such a way as to reduce administrative costs. These institutional innovations include building on existing community development programmes, bundling ecosystem services (for example carbon, biodiversity, water or carbon and eco-tourism) and augmenting existing payments and financing mechanisms,[21] such as community microfinance or existing environmental trust funds, and enlisting the participation of agencies with relevant expertise and mandates, for example, for monitoring land use.

Designing programmes that really benefit the poor: While the PES is not specifically designed to address poverty, as a consequence of the fact that many of South-East Asia's rural poor live in and around valuable ecosystems, it does have the potential to make a positive impact on poverty in these communities. There are however several unique challenges that need to be considered in order to see this potential maximized.

The first challenge is to ensure that the poorest in the community are able to participate effectively in the programme. Because the poor will often own smaller amounts of land, ensuring their participation will require setting the minimize land size requirements for the programme adequately low. While the inclusion of a larger number of smaller plots will tend to increase transaction costs, as outlined previously, a number of technical and institutional innovations can be employed to limit these effects. Ensuring the ability of the poor to participate will also includes ensuring that they have adequate access to the necessary capital, insurance and other financial services. As PES programmes often include upfront costs and can involve considerable investment risk, these services are critical to ensuring programme accessibility.

The second challenge to achieving poverty benefits through PES programmes is in ensuring that programmes do not unintentionally adversely affect the livelihoods of the regions poor. Because land management under PES contract, such as forestry conservation, will often be less labour-intensive than previous land uses, such as agriculture, programmes could affect regional labour markets. Furthermore, because the poor are often renters of land rather than the owners of it, PES also has the potential to adversely affect the livelihoods of the poor by increasing the opportunity cost of the land to land owners and therefore increase the rent demanded. Finally, because PES will involve limiting access to resources in the region, such as timber for fuel, the impact on the livelihoods of the poor who are traditionally most dependent on such environmental could be devastating. In order to limit these effects, programme design should take regional economic and land ownership structures into consideration and design programmes to address such externalities.

It is important, however, to remember that the objective of the PES mechanism is to provide incentives to secure a flow of ecosystem services that are important for socio-economic development, rather than to reduce poverty, and that programme design must also ensure that payments are consistently targeted to areas that provide high ecosystem service benefits as a basic criteria.

Box 5 A checklist for the accountable policymaker

The accountable policymaker could consider the following points as a start to investigating how effective a PES programme or policy is likely to be. At the same time, effective programme implementation can start with the simplest approach, followed by adaptations to the design over time.

- Have clear objectives been defined for the PES mechanism, and do those objectives support national economic planning and rural development objectives?

- Has the question "is PES the right policy instrument?" been asked and answered in a satisfactory way?

- Is there a clear targeting policy – criteria for defining which areas may receive payment and for which activities?

- Have proper monitoring mechanisms been put in place, including financial auditing?

- Are there provisions for redress and conflict resolution? Are enforcement mechanisms realistic, and accountable?

- Is there proper coordination between relevant authorities – who are they? Are key stakeholders engaged and their partnerships leveraged?

- Have potential barriers to participation (e.g. gender, religious etc.) been addressed?

- Has there been proper communication (two-way) during the implementation process?

- Can statistics be provided quickly and easily to the public and to policymakers regarding the functioning of the scheme?

PES: Selected experiences

The South-East Asia Regional Workshop on Payments for Ecosystem Services, Bangkok on 29 June-1 July 2009 was co-organized by the Asia Regional Biodiversity Conservation Programme, the ASEAN Centre for Biodiversity, ESCAP and the Asian Development Bank. The workshop featured presentations of PES applications, providing an insight to the range of application of PES in the Asian and Pacific region. Selected experiences are outlined below. Many more cases have been researched, implemented and documented by the RUPES/ICRAF programme, among other institutions.

Developments in PES policy formulation

As the demand for PES projects increases in the Asian and Pacific region, national level policy frameworks have become more important than ever. PES projects have provided necessary foundation for formulating such policies and operationalizing PES.

Viet Nam is the first South Asian country to launch a national pilot policy on Payment for Forest Environment Services (PFES).[22] Lam Dong province, located in the upstream of Dong Nai river basin and with more than 60 per cent forest covered area, was selected as one of the pilot project areas in 2007. While the forest cover provided by Lam Dong is critical to maintain the water resources as well as bio-diversity conversation, this province has a low GDP per capita in comparison to other provinces and high poverty rates.[23]

During the implementation of the pilot policy, starting in April 2008, more than three hundred thousand hectare of forest land were contracted to about 14,000 local households for sustainable management. This project has ensured a high level of participation using communication media like radio and television and local institutions. With funding from USAID, the Asia Regional Biodiversity Conservation Programme supported the effort of policy development, providing training and spreading awareness.[24]

Major buyers of the ecosystem services are hydropower, tourism and the water bottling industry. Eco-tourism businesses have been asked to pay one per cent of their revenue in return for forest environmental services related to scenic beauty. The hydropower plants and water utilities which use water from the Dong Nai River are expected to invest about US$3 million per year to maintain the long-term productivity of the hydropower plant, water supply and water quality. With the help of the newly established Lam Dong Forest Protection and Development Fund, the Government ensures proper dissemination of funds to the service providers i.e. the participating households and communities.[25]

In order to support biodiversity conservation, Viet Nam established a Biodiversity Law from 1 July 2009 which provides for PES. According to this law, environmental services related to biodiversity should be identified, and a mechanism for payments to the providers of such services established.[26] In the light of the continued degradation of the forest cover, the Vietnamese government has given particular importance to REDD as part of its climate change mitigation strategy. The Ministry of Agriculture and Rural Development is formulating a national REDD policy to complement the ongoing climate change mitigation and PFES projects.[27]

In **Indonesia**, a regulation on "Implementation of Demonstration Activities for Reducing Emission from Deforestation and Forest Degradation (REDD)" was issued in 2008 and followed by regulation on "Procedure of Emission Reduction from Deforestation and Degradation of Forest" in May 2009. A draft for a Presidential Decree on PES regulation covering watershed, eco-tourism and REDD has been prepared. Indonesia became the first country in the world to release the rules governing the revenue sharing of forestry projects based on REDD.[28] These rules stipulate that between 20 and 70 per cent of the revenues would go to local forest communities and rest will be shared between central, provincial and local government.[29]

In **China**, while there are many local and provincial-level PES enabling policies already in place, lack of national level structural policies is seen as a major challenge in operationalizing PES in it's 'purest' form. The Government has shown its commitment to PES with announcing Guiding opinions on the pilot works of ecological compensation in 2007 and is working on many pilot PES projects. With a special mention given to Ecological Compensation in the five year plan 2005-10, the Government has initiated steps to prepare National Guidelines for Eco-Compensation in River Basins and a Framework for Soil Pollution Management.[30]

Watershed management projects

Watershed and forest development projects have generated significant interest from community, government, NGOs, private sector and other stakeholders. Apart from providing eco services like clean water, reduced soil erosion and biodiversity conservation, such projects have shown tremendous social and economic benefits.

In response to an increase in the severity and frequency of flooding in China, the Chinese government started its sloping Farming Lands Conversion (SFLC) programme in 1998. Aiming to increase forest cover by 10 to 20 per cent by 2010, SFLC is one of the largest PES projects implemented in any developing country. The central Government paid for the environmental services using cash and grain. As a result, this programme has also been referred to as the "Grain-for-Green" policy. By reducing soil erosion, the SFLC not only maintains watershed function but also helps to maintain the productivity of hydropower dams on Yangtze River.[31]

However, finance has always remained an issue in projects like SFLC because of its dependence on government funding. The rising values of land are also a concern for participating farmers. The government has now recognized the potential of enhancing a "market" approach that could involve other investors. In 2007, the central Government introduced a framework for Ecological Compensation- Guiding opinions on the pilot works of ecological compensation in 2007, which not only includes payment to ecological services providers but also takes care of other forms of compensation, for example to those affected by pollution.[32]

Indonesia boasts several watershed management projects that use PES as a policy instrument. These include a site at the Cidanau river catchment where land use change has caused sedimentation and affected water quality. There, a water supply company pays for the maintenance of environmental services, and an intermediary institution has been established to facilitate the payments made per hectare of area protected. In Lombok, a similar payment is financed through a nominal fee charged to water users, and an intermediary stakeholder institution mediates the payments that support agro-forestry and forest protection.

Biodiversity and eco-tourism projects

Many of the watershed conservation projects also contribute to biodiversity conservation, but there are several projects especially focused on biodiversity conservation projects. **Cambodia** presents an excellent example with its Seima Biodiversity Conservation Area project. Launched in 2002, this biodiversity conservation project pays local people for conserving bird-nests to address increasing threats to endangered species. As the coordinating agency, Wildlife Conservation Society (WCS) contracts local people and pays them for their labor as well as outcomes in terms of the number of nests protected. Starting with four villages in 2002, six years later this project had expanded to 21 villages and protected more than 1,500 nests.[33]

In Angkor, Cambodia, WCS and the Sam Veasna Centre, a local NGO, have started an innovative eco-tourism project in coordination with local communities and the eco-tourism industry. The area receives especial attention from bird-watchers but hunting and degrading forests are threats to rare bird species. Under this community-based eco-tourism project, villages sign contracts under which hunting would be banned and land use planning with the NGO and government supported. In return, payments of up to US$ 4000 per village were established, and served as the most important source of rural income in the area.[34] Meeting the two goals of biodiversity conservation as well as poverty reduction, the Sam Veasna Centre won the Equator prize for poverty reduction in 2008 and the Wild Asia Responsible Tourist Award in 2007.[35]

Sustainable production

The Agri-environment project started by WCS in coordination with government and local NGOs in north **Cambodia** provides an example of promoting sustainability through the supply chain. Here, the buyers for the environmental services are city-based hotels and the sellers are farmers in villages. Farmers receive payment and guarantee the purchase of their farm products from the hotel industry if they agree to limit further expansion of their farm land. The products are sold in the local markets with a "Wildlife-Friendly" label and thus ultimately the end users are paying a premium for conserving the forests and biodiversity.[36]

Organic farming as a sustainable production method provides another way to help reducing soil erosion, conserving biodiversity and keeping water resources free from pesticides. There are many successful projects ranging from Doi Chaang, the Arabian coffee produced in Chiang Rai, northern Thailand[37] to Totapuri mango produced in Andhra Pradesh in South India. Some of these products are sold at high premium which shows customers' willingness to pay for environment friendly production.

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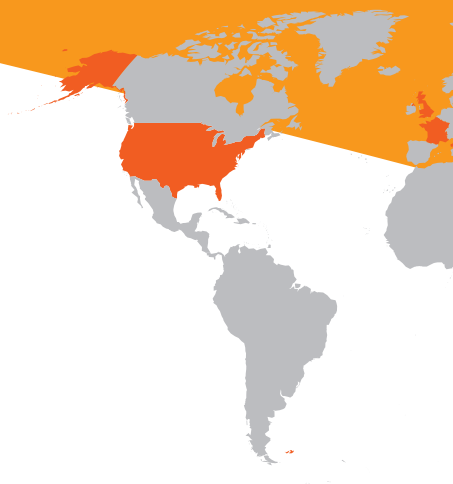

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