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PAYMENT FOR ENVIRONMENTAL SERVICES

SECRETARIAT NOTE

INTRODUCTION

1. Recent years have seen increasing discussion about the economic significance of environmental services of forests. Payment for such services is seen as a source of income to support sustainable forest management. Among the environmental benefits of forests are:

- biodiversity conservation
- watershed protection
- carbon sequestration and protection of air quality
- control of land degradation and desertification
- protection of landscape and scenic values
- other benefits – for example shade and reduction of noise pollution in cities.

2. With a decline in income from traditional products, forest resource managers are looking increasingly to new sources of revenue. Payments for environmental services (PES)¹ may have potential for financing some portion of the costs of sustainable forest management

3. While the environmental benefits of forests are significant, there are few functioning “markets” for environmental services². Establishing these markets is difficult because environmental services are hard to quantify, the benefits often accrue to a wide range of people or

¹ PES is defined as a payment to provide or sustain a defined environmental service, landscape feature or land stewardship outcome.

² A market would allow suppliers and customers to exchange freely the sale and purchase of environmental services without significant public sector involvement.

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society as a whole, and the costs of collecting revenues can be high. As a result, payments or transfers for the environmental service are often provided by the public sector seeking to facilitate action and reduce transaction costs. However, to finance these transfers, governments will often introduce a scheme of taxation or direct charges to identifiable beneficiaries. Thus, at the core of any PES scheme is the challenge of identifying beneficiaries, determining the value of their benefits and extracting from them payments that they have not had to make in the past.

5. PES is also a potential means for poverty alleviation although experience to date has shown this to be an elusive objective. Rewarding resource managers for improved land stewardship could enhance their income³. An example might be downstream water users paying upland communities to refrain from land uses that adversely impact the quantity and quality of stream-flow.

6. This paper provides an overview of the potentials and constraints in developing PES. Drawing upon experiences in Asia and elsewhere, the paper assesses the current state of knowledge on the subject in the context of sustainable forest management.

ENVIRONMENTAL SERVICES PROVIDED BY FORESTS

Payments for watershed protection

7. Watershed protection is an environmental service that has pioneered the use of payment schemes. PES for watershed management typically involves payments to upstream land users for improving or stabilising land use in the catchment, for example by paying land owners not to harvest trees, build roads, or convert forest land to other uses that could adversely affect water quantity or quality needed for irrigation, drinking water, or hydro-electric utilities. In some cases, financial transfers have been made from utility companies to land users or land owners.

8. The institutional and policy framework for payments for watershed protection will depend on the size of the watershed, the number of providers and users of the service, and their social, economic and cultural situation. Although water is often regarded as common property, traditional communal management of water in many societies defines the responsibilities of upstream land users and how they may be compensated by downstream beneficiaries. Typically such arrangements are more effective for small watersheds where providers and beneficiaries of the service are able to interact and the flow of information is relatively easy.

9. As the size of the watershed increases and the number of providers and beneficiaries multiplies, more complex arrangements become necessary. Where utility agencies are involved, a watershed protection charge might be added to the electricity or water charges, with the proceeds paid to upland communities for conservation efforts.

10. Almost everyone understands the importance of water. At least in developed countries, users are generally willing to pay for a regular supply of good quality water. Also, since it is quite easy to identify watersheds, it is easy to identify the providers and beneficiaries of the service.

11. Nonetheless development of a payment system for watershed services faces a number of problems:

- The lack of clarity about the impact of different land uses on water is a major problem (Kaimowitz, 2004). Numerous scientific doubts remain about forest-water linkages. It is

³ The International Fund for Agriculture Development (IFAD) and the World Agroforestry Centre are jointly implementing the programme "Rewarding Upland Poor for Environmental Services" (RUPES) in Asia. The objective of the programme is to enhance the livelihoods of upland communities and reduce poverty, especially through biodiversity conservation, watershed management, carbon sequestration and maintaining landscape beauty. Currently the RUPES programme has five field sites in Indonesia, Nepal and the Philippines.

therefore often difficult to identify the precise nature of watershed services provided by land users. To be workable, simple approaches are needed to make payments, such as a flat rate per unit area, that are not necessarily linked to the actual service provided.

- In some societies, access to water is seen as a fundamental right. Development of markets for water requires defining property rights, which in many countries is not a trivial issue⁴. There is also concern that payment systems may exclude access of the poor to water.
- In the case of large watersheds with many users, the transaction costs for PES can be very high. Intermediary organizations are usually needed to link producers and users. Development of rules and regulations and monitoring compliance can be very demanding. Especially in situations where institutions are weak, development of PES for water can be costly.

12. Consequently, market mechanisms for watershed services are still in the early stages of development. Most arrangements are either between small groups of users and providers who are able to interact efficiently, or by large utility companies in developed countries that levy charges and channel the funds to those undertaking watershed conservation. An example of the first is Costa Rica, where the Forestry Financing Fund (FONAFIFO) pays forest owners providing water protection services with funds received from public utility companies.

13. Ownership responsibilities to protect ecosystem services are often poorly defined, as are rights to be compensated for providing them. Schemes for payment for watershed services include (a) self-organized private deals (b) trading schemes and (c) public payment schemes. In reality there is a continuum of mechanisms, involving public and private sectors. Publicly-financed transfer payments are likely to remain the most common financial mechanism.

Development of carbon markets

14. Carbon sequestration for climate change mitigation is a global public service, making it difficult to develop effective payment systems. The Kyoto Protocol is an ambitious effort to create a global market for carbon, stemming from the obligation of countries to reduce carbon emissions (Pagiola, et al., 2002). Carbon sequestration is primarily a function of biomass production, so the actual measurement of changes in carbon stock is relatively easy. As a result, some observers contend that “carbon trading” has a high market growth potential, but to date few concrete examples of payments for forest-related carbon sequestration have materialized.

15. Forest-based carbon sequestration has three segments:

- the Clean Development Mechanism (CDM) of the Kyoto Protocol
- non-Kyoto trading schemes intended for eventual crediting
- voluntary carbon emission offsets (International Tropical Timber Organization (ITTO), 2004).

16. Some observers predict that the size of the global carbon market could be worth nearly US\$40 billion by 2010 and US\$200 billion sometime in the future; carbon could potentially become one of the world’s largest commodity markets (Bayon, 2006). However, most efforts have so far been focused on emission reduction rather than on carbon sinks. For example, not a

⁴ The national convention on “Building water democracy, resisting water privatisation” held in India in February 2006 condemned the efforts to privatize water and stressed the need to defend water as a living resource, a gift of nature and a fundamental right.

single carbon offset forestry projects have been registered under the Chicago Climate Exchange and the European Union Emission Trading Scheme does not currently include sink credits⁵.

17. Some issues to consider in assessing the potential of carbon markets for supporting sustainable forest management and poverty alleviation include:

- Within the CDM framework, the overall share of afforestation/reforestation will likely remain limited.
- At the 11th Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC) it was proposed to address the reduction of carbon emissions through avoided deforestation under the instruments of the UNFCCC. It remains to be seen if and when this will happen.
- Carbon markets will be very competitive, and regions or countries with low biomass productivity may be left out. Competition is likely to keep prices and profits low. In a competitive global market place, investments in afforestation/reforestation will primarily go to high biomass productivity areas with favourable policy and institutional frameworks.
- Transaction costs remain high, especially for small-scale producers. Dealing with a large number of small holders increases the transaction costs, including those for monitoring changes in the carbon stock. This compels carbon buyers to focus on large holders. Hence, the potential for carbon trading to reduce poverty is doubtful.

Conservation of biological diversity

18. As the ability of public funds to support biodiversity conservation declines, there have been efforts to identify alternate sources of financing biodiversity conservation through PES. This is especially important if community participation in biodiversity conservation is to increase, or to compete with more profitable land-use alternatives.

19. The market for biodiversity conservation is highly segmented, and a number of different payment systems exist, including:

- purchase of high-value habitat (including “debt-for-nature swaps”)
- payment for access to species or habitats
- payment in support of management to conserve biodiversity
- tradable rights
- support for biodiversity conservation business (Jenkins, et al., 2004)

Each of the above requires a specific policy and institutional framework. The market for biodiversity conservation is still nascent. Most purchases of high-value habitats (often through debt-for-nature swaps), for example, are made by international agencies, including large non-governmental organizations and foundations. In the context of bio-prospecting, issues like intellectual property rights become critical. Benefiting from emerging biodiversity markets will require strengthening the legal and institutional framework in most countries.

20. International buyers of biodiversity conservation usually focus on critical habitats perceived to be under greatest threat. Private corporations are interested in eco-labelling schemes, investments in biodiversity-friendly companies, or pharmaceutical bio-prospecting – payments for which tend to be highly site-specific. Local actors generally focus on protecting species or habitats of particular economic, subsistence or cultural values (Jenkins, et al., 2004).

⁵ The New South Wales Greenhouse Gas Abatement Scheme does support carbon sink projects. However, as of February 2005, only 2 of the 127 accredited projects involved carbon sequestration.

21. High levels of biodiversity can also be an important element in eco-tourism, but benefiting from increased tourism will depend on other factors that add value, including investment in infrastructure, marketing and the ability to compete in the global market place (ITTO, 2004).

Scenic values and eco-tourism

22. The rapid growth of eco-tourism in selected countries has enhanced the income potential in areas of undisturbed ecosystems. Eco-tourism is indeed the fastest growing segment of travel and tourism, and its expansion is particularly rapid in the Asia Pacific region. Increasingly, domestic tourists in Asia are becoming as important as international tourists. Forested landscapes provide an important element of eco-tourism in a number of countries and the presence of unique flora and fauna adds to the attraction.

23. A major challenge is the need to move up the value chain, enabling the provision of visitor services efficiently. The mere existence of unique scenic spots is not enough to make eco-tourism a viable proposition. Investment in infrastructure is a necessary condition for the development of eco-tourism. As more countries and regions enter the tourism market, competition will become intense and profit margins will decline. In some cases, late entrants will have to invest in infrastructure and other facilities. More importantly, eco-tourism is highly sensitive to the political and social environment, especially perceptions of security.

24. The growth of eco-tourism, and thus the income of resource owners also, largely depends on the overall economic situation, especially the growth of disposable income and the cost of transportation. Other issues include addressing adverse environmental effects due to increased visitor pressure, and ensuring that a share of income from eco-tourism benefits local communities rather than simply absentee investors. This implies the need for different agencies to work together, including the tourism and forestry departments; and an institutional framework with incentives for private investment.

KEY ISSUES IN THE IMPLEMENTATION OF PES

High transaction costs

25. As the private sector becomes increasingly important in most national economies, market mechanisms offer a potential supplement to traditional regulatory approaches for environmental protection. However, environmental markets are more sophisticated and complex than traditional commodity markets, and transaction costs can be extremely high. Potential costs include:

- the cost of improved access to information
- the cost of defining property rights
- the cost of drawing up legal contracts for the provision of environmental services.

Information and legal costs will be particularly demanding if environmental services are traded in global markets. Most examples of ecosystem markets are found in developed countries with relatively developed legal institutions (ITTO, 2004).

Equity issues and poverty alleviation

26. Payments for environmental services raise major concerns about equity. Given current inequalities in income in most countries, a sizeable section of the population will probably not have the ability to pay for most environmental services. Those with the ability to pay will dominate the market place, potentially depriving others of critical environmental services. For

example, opposition to privatizing the water supply in many countries largely stems from this concern.

27. The ability to benefit from PES depends on access to and ownership of natural resources. By definition, most of the rural poor do not own natural resources. Efforts to design PES to reduce poverty are in the early stages, making it difficult to assess their impact. There are some indications that the poor may not benefit from ecosystem markets (see Kerr, et al., 2004). Hence, ecosystem markets are unlikely to make much contribution toward alleviating poverty.

THE FUTURE OF PAYMENT FOR ENVIRONMENTAL SERVICES

Demand and supply of environmental services

28. Demand for environmental services in the Asia-Pacific region is expected to increase for a number of reasons. As income increases and essential needs are satisfied, societies place a higher priority on environmental services – clean water and air, scenic beauty, etc. Increased income also enhances the ability and willingness to pay for environmental services. Growth in eco-tourism in the region is already generating an increase in demand for environmental services.

29. Economic growth increases pressure on the environment, resulting in loss of biodiversity, increased water and air pollution, degradation of land and increased emission of greenhouse gases. Assuming that Asia's rapid economic growth continues, environmental problems are likely to worsen. Clean water, air and biological diversity will be in short supply, compelling countries to take measures to protect them. Payment for such services may become more important.

30. It is unrealistic to assume that effective market mechanisms will develop on their own to meet the increasing demand for environmental services. Studies suggest that even under optimistic assumptions, the total value of markets for environmental services will be much less than that of the market value of wood and non-wood forest products. As in other regions, Asia-Pacific will face challenging public policy decisions to deal with environmental services.

Macro-economic environment

31. Most studies on payments for environmental services are done at the micro level, focusing on specific areas or services, often starting with biophysical aspects before considering the economic and institutional issues. Wider application of PES will depend on the macro-economic environment and, more importantly, the overall state of social and economic development. Countries and societies with higher incomes tend to make greater demands for environmental services and are willing to pay for them. Countries with lower incomes will find it difficult to develop systems for payment for environmental services.

32. Although environmental services will be valued and cherished, developing a viable system for payment is a very different issue and the necessary and sufficient conditions may not exist. The transaction costs for building up the institutional framework (policies, legislations and institutions to oversee the implementation of payment systems) are very high.

CONCLUSIONS

33. Some conclusions from a review of the current experience of PES include:

- Development of ecosystem markets depends on overall social and economic development. PES markets are better developed in industrial and post-industrial societies, where willingness to pay for environmental services is high. PES will be slow to develop in most developing countries.

- Development of systems for PES will involve high transaction costs, including investment in legal and institutional capacity and provision of reliable information on complex biophysical and economic processes.
- Since ecosystem markets are in the very early stages of development, their potential to become an important source of financing sustainable forest management remains limited. So will be their potential to alleviate poverty.

34. The Commission is invited to share the experiences of member countries regarding PES, and to identify ways to enhance the provision of environmental services in the context of the limitations of market-based approaches.

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