KM 4 CTI Learning Notes

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ADB Regional Technical Assistance (RETA) 7307:
Regional Cooperation on Knowledge Management, Policy, and Institutional Support to the Coral Triangle Initiative

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PES 101. Basics of Payment for Ecosystem Services in the Coral Triangle

PES in a Nutshell

Payment for ecosystem services (PES) is an incentive system that may be applied to modify the behavior of individuals whose resource management practices are producing negative environmental consequences on other people. A PES deal seeks to sustain desired ecosystem services by ensuring best management practices by the resource user and that payment of an incremental fee encourages these best practices. PES creates a market for a specific ecosystem service, where there was none existing, by identifying a seller and a buyer, and for these actors to voluntarily agree to "pay" a certain fee in order to enjoy a defined level of an ecosystem service and for the other party to "accept" the fee in exchange for maintaining the particular ecosystem service.

For example, excessive use of chemicals in upland agriculture may result in poor water quality to downstream consumers. In the coastal sector, mining of coral reefs diminishes their capacity to generate sand for beach build-up. In the former, the prospective seller of an ecosystem service would be upland farmers, while the potential buyer of the service would be water consumers such as lowland farmers, households, and industry. Various types of payments can be transacted with the "sellers," including direct payments by the government, regulations, or private deals. While contributing to conservation objectives, PES also offers possibilities to generate financing to fund the various actions required by the CTI Regional Plan of Action (RPOA) and the CT countries' National Plans of Action (NPOAs).

A Checklist for Developing a PES Deal

A useful checklist for developing a PES deal is summarized here, but the reader is encouraged to consult Payments for Ecosystem Services: Getting Started, A Primer (Box 1). The steps in developing a PES deal include:

1. Identifying ecosystem service prospects and potential buyers. Of import here is the determination of ecosystem service and measuring and defining the standards. Also included in this stage is the estimation of value and identification of buyers and sellers of the service.

Box 1: References and other PES Resources for Further Reading

Forest Trends, The Katoomba Group, and UNEP. 2008. "Section 2: Lessons and Best Practices for Pro-Poor Payment for Ecosystem," Payments for Ecosystem Services: Getting Started, A Primer. http://www.unep.org/pdf/PaymentsForEcosystemServices_en.pdf . Downloaded on 16 September 2010.

Moberg, F., and C. Folke. 1999. Ecological Goods and Services of Coral Reef Ecosystems. Ecological Economics, 29(2): 215-233.

USAID. 2007. Services: USAID PES Sourcebook.

World Resources Institute. 2005. Millennium Ecosystem Assessment 2005. Ecosystems and Human Well-being: Synthesis. Also available at www.maweb.org

Hassouna, K. and G. Thoumi. Unpublished. Concept Note: Islamic Finance, Payments for Ecosystem Services, *Zakat* Forest Carbon Offsets, and *Sukuk* Conservation Finance Bonds.

2. Assessing institutional and technical capacity. Useful questions to ask at this stage would be whether PES deals can flourish under the current legal and regulatory framework. Likewise, identification of support groups who may provide technical advice is essential at this point.

3. Structuring agreements. Business plans are developed at this stage, and the type of payments and contracts considered.

4. Implementing the PES agreement. Is the deal working? Are payments being made? Are the conservation objectives being met? These are some questions to ask during the fourth and final stage.

Focusing on the First Step: Identifying the Ecosystem Service

A prerequisite to the application of PES is the recognition of ecosystem services attributable to coastal ecosystems such as coral reefs, mangroves, and seagrass beds, for example. Ecosystem services, unlike ecosystem goods like fish or water, are not readily bought and sold in a market. Although they have no price, they are at least as valuable as the goods that can be extracted. Not being adequately priced in the market results in perverse uses; this is one issue that PES seeks to correct.

The Millennium Ecosystem Assessment is a comprehensive listing of different types of ecosystem services derived from forests, oceans, and agricultural lands (2005). In this issue of KM 4 CTI Learning Notes, we focus on the various ecosystem services derived from coral reefs based on Moberg and Folke (1999) (Box 2). From the listing provided, it becomes apparent that good science must form the basis of good PES. Good science is needed to define theecosystem service, the measurement of this service, and the activities that

Box 2. Ecosystem Services from Coral Reefs (based on Moberg and Folke, 1999)

Physical structure services	• Shoreline protection • Build up of land • Promoting growth of mangroves and seagrass beds • Generation of coral sand
Biotic services	• Maintenance of habitats • Maintenance of biodiversity and a genetic library • Regulation of ecosystem processes and functions • Biological maintenance of resilience • Biological support through mobile links • Export of organic production and plankton to pelagic food webs
Biogeochemical services	• Nitrogen fixation • C02 and Ca budget control • Waste assimilation
Information services	• Monitoring and pollution record • Climate record
Social and cultural services	• Recreation • Artistic values and inspiration • Livelihoods • Spiritual, religious, and cultural values

threaten the constant flow of the service, and recommend approaches to maintain the ecosystem service flow. These recommendations will determine the actions ecosystem service "sellers" would take.

The first challenge is to assess which particular ecosystem service is being threatened by current use patterns and how. For example, are some fishing practices contributing to the inability of coral reefs to protect the coastline? Or does it affect the coral reefs' inability to serve as nurseries or spawning grounds? If yes, by how much? Who is responsible for such fishing practices and who are affected by the action? Can they be one and the same segment of the coastal population or are other indirect users also affected by these practices? At this stage, the value of the ecosystem service must also be determined. After the "buyers" and "sellers" have been identified, how much would the buyers pay in order for fishers to stop their deleterious practices and how much would these fishers accept for them to change their practices? A willingness to pay study is usually implemented to derive these values.

PES Applications in the Coral Triangle

Much of the developed PES applications in the CT6 are in the forestry and agriculture sectors. PES schemes have been developed in three watersheds in Indonesia: Lombok, Sungai Wain Protection Forest in Balikpapan, East Kalimantan, and Conservation Districts found in Kuningan, Kapuas Hulu, and Malinau. In the Lombok example, scarcity of water supply became evident due to the disappearance of 40% of the 85 springs in the area. The PES experiment, which included a willingness to pay survey, recommended that a certain amount be collected as top-off to the water bill for conservation of water resources.

One of the first large-scale carbon sequestration services was set up in Malaysia in 1992 by the FACE Foundation. The program aims to sequester 15.6 million tons of CO_2 over the next 100 years by regenerating 25,000 hectares of rainforest. Borrowing the twin concepts of "*zakat*" and "*sukuk*", a concept note was developed by Hassouna and Associates, supporting the issuance of bonds under a state-owned corporation (i.e., the Perak State Corporation), to promote good forestry practices, share the economic benefits, and promote buyout schemes for logging concessions.

In PNG, a national PES proposal has been developed to empower landowning groups to implement a forest carbon saving strategy through sustainable forest management. The Solomon Islands has submitted an expression of interest to Convention on Biological Diversity (CBD)/Life Web for mainstreaming protected area outcomes (in both terrestrial and marine environments) coupled with PES possibilities and climate change adaptation. In some countries like the Philippines, the best example of PES in the marine sector are user fees based on divers' willingness to pay. The user fee system imposed on divers in Anilao, Batangas, which is a popular dive spot, is an example of PES. Tourism seems to be a good place to start PES approaches in the marine sector although not all user fees are PES; the latter is determined by what the money is used for and who uses the money.

What Can Be Done

Despite the lack of successful examples of PES schemes in the marine/coastal sector, a lot may be learned from "best practices" in the forestry and land sectors. Coastal tourism activities have potential to be developed into PES schemes. Marine protected areas (MPAs), mangroves, and coastal sceneries are emerging PES candidates.

If there are any opportunities to develop PES on coral reefs and coastal resources in your country, please let us know.

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RETA 7307 supports ongoing CTI efforts via knowledge management on the preparation of a State of the Coral Triangle Report, sustainable financing, and environmental economics and payment of environmental services for the CTI.

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