



ABSTRACTS, CASE BRIEFS AND ANNOTATED REFERENCES

Tracking the Literature on Payments for Environmental Services

Compiled by

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This report is divided into three sections. The first section provides an analytical overview of the literature on Payments for Environmental Services. Concepts are defined and a cursory analysis of the common threads for PES in the literature reviewed is presented. Further, the distribution of literature in terms of geographic areas and types of environmental service is also provided. The second section presents the list of bibliographies of literature. The entries with asterisks indicate that annotations are provided, which are found in the third section. The annotation summarizes each literature in terms of key parameters, such as type of environmental service, geographic coverage and other relevant information, e.g. provider/seller/buyer/broker of the environmental service, where applicable. An abstract or summary is a vital addition to this section.

This contribution recognizes existing annotated bibliographies that have been completed and shared by various authors and organizations. This initiative, however, focuses on literature in the Philippines primarily although the authors have also included published and unpublished documents from other countries.

I. OVERVIEW OF LITERATURE ON PES

1. Background

Ecosystem services may be classified into four broad categories: watershed protection, carbon sequestration, biodiversity, and land/seascape amenities. To sustain the provision of these services, market approaches have been increasingly implemented to raise funds to complement traditional sources that include government budgets, official development assistance (ODA) and grants. Markets for environmental services (MES), specifically through financial payments for such services (PES), seek to extract payments primarily from direct users or beneficiaries of ecosystem services. For

instance, water users, e.g. local water districts, mineral water bottlers and farmers, are assessed some fees in exchange for the use of water from protected areas and even groundwater. Some utility companies (in Annex 1 countries in United Nations Framework Convention on Climate Change (UNFCCC)) purchase carbon credits from eligible forestry projects in developing (non-Annex 1) countries. Entrance fees are imposed for visits to ecotourism sites. Bioprospecting agreements specifying milestone payments have been signed between pharmaceutical companies and mega-diverse source countries.

Innovative schemes to harness market potentials to sustain the flow of ecosystem services (ES) have now been developed around the world. MES mechanisms are usually site-specific, recognizing the source of ecosystem services. The U.S. has a long history with its programme on land purchases, tax reliefs, etc. In the developing world, South American countries such as Costa Rica, Brazil, Ecuador, Mexico and others have been setting the trend. Some of these initiatives were supported by the World Bank and the Global Environmental Facility (GEF). The initiatives in Asia-Pacific are relatively new. Most of these have been implemented by non-government organizations (NGOs), research organizations and governments. Even with an early stage of work on markets for ecosystem services in the region, the potential is already quite considerable, primarily in watershed protection, carbon sequestration and land/seascape amenities.

PES mechanisms have been generally targeted to sustain ES for the benefit of local, national and global society. The basic idea is to reward ES “providers”, with the reward or payment as an incentive for providing environmental services. Payments will come from the “users” or beneficiaries of the ES. “Providers” could be individuals, villagers and communities whose economic decisions involving the use of forest, marine and agricultural ecosystems determine the sustainability

of natural assets and the services these provide. “Users” could be individuals, private companies, environmental organizations and even global society. Government could either be a provider or a user of the ES depending on the circumstances.

An important consideration in PES schemes is responsiveness to developmental and social objectives. Payments, primarily in financial forms, would not only provide the incentive for sustaining the provision of ES but more importantly augment the income of “providers”. Such payments could be used to purchase other basic necessities such as food, shelter, medicines and even education. Direct payments by users or beneficiaries of environmental services serve to redistribute the benefits to the latter group.

From a cursory review of literature, several conditions are necessary for PES mechanisms to work.

- First, the users and providers could be **identified** — there is a seller and a buyer of the ES.
- Second, the ES could be **measured** in terms of physical quantity and/or economic benefit derived by the user — the eventual buyer.
- Third, the user could be required to pay for the enjoyment of the ES through various means. One is through exclusion for non-payment although this may not apply for most environmental services. The other is through local, national and international legal framework that could require users to pay for the use of the ES. Still another is through persuasion — appealing to the sense of environmental responsibility of the user. It is emphasized that the level of payment could provide incentive for the **sustainable use** of the ES. This means that the payment should approximate the economic benefit derived by the user in the enjoyment of the ES.
- Fourth, the payments could directly or indirectly reward the providers. The level of payment could provide sufficient incentive for the **sustainable provision** of the ES. This means that the reward should be comparable to those derived by the providers in their alternative uses of natural ecosystems.
- Fifth, there are effective and efficient **institutions** that could implement PES mechanisms in the local, national and global setting.

2. Objectives, Target Users and Limitations

The development and implementation of PES mechanisms in the Philippines are in relative infancy in terms of geographic extent, coverage of environmental services and sophistication of reward mechanisms compared to those in some South American countries. The advanced legal framework provided for by the NIPAS Act, the Local Government Code, Wildlife Act and other laws, may not have been matched by work on the ground although there are exceptional cases of innovation. Related work on PES is, however, increasing.

The tracking of literature on PES in terms of description of the PES mechanisms and summarizing of results and lessons learned and bibliographic listing provide a useful resource to various target users. These include local and national policy makers, NGOs/Peoples Organization (POs), research and academic institutions, private sector and donors, all of whom are key actors in the development and implementation of PES mechanisms. The bibliographic listing and annotations that follow are intended to shorten the process of research, facilitate access to global literature on PES and learning from the experiences of others.

This document is a work in progress. Given limited available time, the bibliographic listing and annotations still cover perhaps a small part of the global literature. However, it will be gradually “built up” over time. Further, this document aims to complement the more extensive bibliographic listing done by other groups by annotating selected literature. Readers are enjoined to provide copies of papers and documents not listed in this compilation for future inclusion.

3. Definition of Terms

The following terms contained in this document mean the following:

Biodiversity	broadly covers the diversity of all life forms in an ecosystem — the inter- and intra-species diversity of flora and fauna, both at micro and macro levels.
Brokers	those who act as mediators or negotiators between buyers and sellers of environmental services.
Bundled services	environmental services that are treated as one primarily in terms of provision.
Buyers	beneficiaries of the environmental services. They are economic agents who benefit from the service through a consumer good. Buyers may be local, national and global in scope. They may include water users, hydroelectric consumers, bioprospecting firms, local water districts and hydropower firms, generators of greenhouse gases, biotechnology companies that exploit genetic diversity for the improvement of cultivated species and society, ecotourism/recreation enthusiasts, and society in general.
Carbon sequestration	refers to the removal of carbon from the atmosphere to counterbalance the effects of fossil fuel emissions and mitigate their effects on global warming.
Environmental services	refer to services provided by the natural environment that generally result to positive outcomes and ultimately benefit people and society. These generally include landscape and seascape beauty, watershed protection, carbon sequestration, and biodiversity conservation.
Landscape/Seascape beauty	refers to the aesthetic as well as recreational values of environmental assets.
Payment arrangements	refer to the mechanisms for which payments for environmental services are extracted from the buyers and transferred to the sellers.
PES	payments for environmental services; refers to transfer of cash (or a good in a barter economy) and other forms of rewards as compensation for the provision of environmental services.
Sellers	providers of the environmental service. They are economic agents whose productive activity generates, as a positive externality, the service for which the payment system has been created. Sellers may be local, national or global in scope. They may include upland farmers performing sustainable agricultural land use practices and/or participating in reforestation and watershed rehabilitation activities, among others.
Watershed services	refer to control of soil protection and sedimentation, regulation of water flows, maintenance of water quality and hydrological functions.

4. Cursory Analysis of the Literature

PES has now progressively been used as instrument to reduce environmental degradation at the lowest possible costs. The cases that involve PES are increasing worldwide. This material has tracked a total of 238 PES-related materials. Forty-four per cent of which have been annotated and the remaining included in the bibliographic listing. Refer to Tables 1 and 2 for figures.

Table 1 Summary of PES Literature

List of Literature	Number	Frequency
Annotated Bibliography	105	44%
Bibliographic Listing	134	56%
Total	239	100%

By type of environmental service

Specific studies on payments on biodiversity conservation, carbon sequestration, watershed protection, landscape/seascape beauty comprise forty-four per cent of the total list of annotated bibliographies while studies on payments for bundled environmental services comprise fifty-six per cent of the same list.

By geographical coverage

Studies focusing on bundled services are mostly regional or global in scope. These comprise seventeen per cent of the total list of annotated PES materials. Most initial studies on payments for carbon sequestration and watershed protection were based on initiatives in South America, specifically in Costa Rica. Countries in other regions of the world are, however, increasingly adopting similar initiatives. For landscape and seascape beauty, most studies were conducted in the Philippines and Southeast Asia, which jointly comprise five per cent of the same list.

General Lessons Learned from the Literature

The following are some general lessons learned from the preliminary tracking of PES case studies and other references. Some of these lessons are emphasized in some of the documents while simply implied in others.

- A legal and regulatory framework is necessary for a PES scheme to be effective. Laws and regulations

help set up schemes which reduce transaction costs of establishing and maintaining PES schemes.

- Stakeholder participation, negotiation and institution building are critically important in sustaining the scheme. Also, information, education and communication campaign and assistance are required to enable stakeholders to change their behaviour and resource-use patterns. Existing laws and customs have to be taken into account, for these determine rights and responsibilities of each stakeholder group. Key stakeholders need to be involved in the planning process early on.
- The private sector and civil society can be tapped to complement conservation activities by the private sector, both by adding the resources located by government for conservation and freeing up of government resources. This is particularly true in developing countries.
- Payment or compensation, both cash and in-kind, must be sufficiently high to serve as economic incentive to those who will conserve the resource. Compensation levels are ideally based on the estimated value or the economic importance of the environmental service.
- While implementing a long-term payment for environmental service scheme, major assumptions should be monitored and tested and, if necessary, adjusted or revised altogether with clear and verifiable agreement on targets, and related implementation and monitoring arrangements.

PES schemes may not constitute a cost-optimal instrument in all circumstances. Such schemes are highly dependent on pre-existing conditions. PES schemes work best when services are visible and beneficiaries are organized, have clear and secure property rights, strong legal framework, and relatively rich or have access to resources.

Table 2
Literature on Payments for Environmental Services
Frequency Distribution by Environmental Service and by Geographic Coverage

Type of Service	Geographic Coverage																					
	Philippines		Southeast Asia ¹		East Asia ²		South Asia ³		South America ⁴		North America ⁵		Africa ⁶		Europe ⁷		Australia & N. Zealand ⁸		Global		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Biodiversity conservation	2	2%	-		2	2%	-	-	2	2%	1	1%	1	1%	-	-	3	3%	2	2%	13	13%
Carbon sequestration	3	3%	2	2%	1	1%	-	-	4	4%	2	2%	-	-	-	-	1	1%	3	3%	16	15%
Watershed protection	3	3%	-		1	1%	1	1%	4	4%	1	1%	-	-	1	1%	-	-	1	1%	12	12%
Landscape/ Seascapes beauty	2	2%	3	3%	-	-	-	-	-	-	-	-	1	1%	-	-	3	3%	1	1%	10	10%
Bundled services	8	8%	6	6%	5	5%	2	2%	11	10%	1	1%	1	1%	-	-	2	2%	18	17%	54	51%
TOTAL	18	17%	11	10%	9	9%	3	3%	21	20%	5	5%	3	3%	1	1%	9	9%	25	24%	105	100%

¹ includes Thailand, Malaysia, Indonesia, Vietnam

² China, South Korea

³ India, Bhutan, Sri Lanka

⁴ Costa Rica, Ecuador, Brazil, Bolivia, Belize, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Chile, Colombia, Nicaragua

⁵ Mexico, Canada, United States

⁶ Botswana, Kenya, Malawi, Namibia, South Africa, Tanzania, Uganda and Zimbabwe, South Africa, Seychelles, Eastern Africa

⁷ France, Italy, Romania

⁸ Tasmania and South Wales

II. BIBLIOGRAPHIC LISTING

- Agius, J. 2001. Biodiversity Credits: Creating Missing Markets for Biodiversity. *Environmental and Planning Law Journal*. 18(5): 481-504.
- Agsaoay, E, Ambal, I, Araral, E, Delos Angeles, M S, Ong, P, Padilla, J E, and R M P Rosales. 2002. Benefit Sharing Schemes in the Implementation of EO 247 otherwise known as "Prescribing Guidelines and Establishing a Regulatory Framework for the Prospecting of Biological and Genetic Resources, Their By-Products and Derivatives, For Scientific and Commercial Purposes, and for Other Purpose". DENR Administrative Order. Unpublished report.
- Alix, J, de Janvry, A and E Sadoulet. 2003. Payments for Environmental Services: To Whom, Where and How Much? Paper prepared for INE/CONAFOR/World Bank Workshop on Payments of Environmental Services, Guadalajara, Mexico.*
- Angelsen, A and S Wunder. 2003. Exploring the Forest-Poverty Link: Key Concepts, Issues, and Research Implications. Occasional Paper No. 40. Bogor, Indonesia, CIFOR.
- Anon. 2001. Commercial Photography in Queensland as discussed in ANZECC (Australian and New Zealand Environment and Conservation Council. Benchmarking and Best Practice Program: User Pays Revenue. A Paper Presented at TNC Workshop on Sustainable Financing for Marine National Parks Based on Tourism Revenues. Bali, Indonesia, 26-30 November 2001. *
- Anon. 2000. Compensation for Environmental Services from Mountain Forests in Costa Rica in Financing Protected Areas Task Force of the World Commission on Protected Areas (WCPA) of IUCN, in collaboration with the Economics Unit of IUCN (2000) Financing Protected Areas. IUCN. Gland, Switzerland and Cambridge, UK. *
- Appleton, A F. 2002. How New York City Used an Ecosystem Service Strategy Carried out Through an Urban-Rural Partnership to Preserve the Pristine Quality of Its Drinking Water and Save Billions of Dollars. Washington, D.C., U.S.A.: Forest Trends.
- Aretino, B, Holland, P, Matysek, A and D Peterson. 2001. Cost-Sharing for Biodiversity Conservation: A Conceptual Framework: Productivity Commission Staff Research Paper. Canberra; AusInfo. *
- Arocena-Francisco, H. 2003. Environmental Service "Payments": Experiences, Constraints and Potential in The Philippines Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provide. World Agroforestry Center: Indonesia. *
- Asquith, N M, Vargas Ríos, M T and J Smith 2002. Can Forest Protection Carbon Projects Improve Rural Livelihoods? Analysis of the Noel Kempff Mercado Climate Action Project, Bolivia. in *Mitigation and Adaptation Strategies for Global Change* 7(4): 323-37.
- Athanas, A, Vorhies, F, Ghersi, F, Shadie, P. and J Shultis. 2001. Guidelines for Financing Protected Areas in East Asia. Gland, Switzerland and Cambridge, UK: IUCN. *
- Australian and New Zealand Environment and Conservation Council. 2001. Benchmarking and Best Practice Program: User Pays Revenue. A Paper Presented at TNC Workshop on Sustainable Financing for Marine National Parks Based on Tourism Revenues. Bali, Indonesia, November 26-30, 2001. *
- Aylward, B. 2002. Market Mechanisms and Environmental Services: A Conceptual Approach and Review of International Experience. Report for the Project on the Integrated Management of Natural Resources and the Environment in the Western Highlands of Guatemala (MIRNA). Guatemala City, Guatemala.

- Aylward, B, Echeverría, J, Fendt, L, E Barbier. n.d. The Economic Value of Species Information and its Role in Biodiversity Conservation: Costa Rica's National Biodiversity Institute. LEEC Discussion Paper Series No. 93-06. London: International Institute for Environment and Development.
- Bacudo, I. 2000. Results of the Willingness-to-Pay Survey in El Nido-Taytay Managed Resource Protected Area: Recommendations for the Establishment of Appropriate Entrance Fees. National Integrated Protected Areas Programme, PAWB-DENR, Diliman, Quezon City.
- Bann, C, Blomley, T, Brinkate, T, Christensen, L, Grieg-Gran, M, Søren, H, Jensen, A, Rae, K and T Chado. 2003. Case Studies of Financing for SNRM. In: P Gutman (ed), From Goodwill to Payments for Environmental Services: A Survey of Financing Options for Sustainable Natural Resource Management in Developing Countries. World Wide Fund: Macroeconomics for Sustainable Development Program Office. *
- Bass, S., Dubois, O, Moura Costa, P, Pinard, M, Tipper, R and C Wilson. 2000. Rural Livelihoods and Carbon Management. IIED Natural Resource Issue Paper, London: IIED.
- Baumert, K A. 2000. Designing the Clean Development Mechanism to Meet the Needs of a Broad Range of Interests. WRI Climate Note, August 2000.
- Bautista, G and R Tan. 2001. Watersheds and Groundwater Depletion in the Philippines: The Cagayan de Oro Experience. Institute of Philippine Culture. Ateneo de Manila University, Quezon City.
- Bautista, G. 2005. Lessons in the Development of Markets for Ecosystem Services in Watershed Context: A Survey of Different Country Experiences. Philippines: REECS, Inc.
- Bautista, G. 2005. Water and a Payment System for Environmental Services. In: Padilla, J E, Tongson, E and R Lasco (eds), PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp 34-49.
- Bayon, R, Lovink, J S, and W J Veening. 2000. Financing Biodiversity Conservation. ENV-134. Washington DC: Inter-American Development Bank.
- Bayon, R. 2004. Making Environmental Markets Work: Lessons from Early Experience with Sulfur, Carbon, Wetlands and Other Related Markets. Washington, DC: Forest Trends.
- Bayon, R and D Carolyn. n.d. Financing Biodiversity Conservation: The Potential of Environmental Funds. United States: IUCN.
- Bellu, L G and V Cistulli. 1997. Economic Valuation of Forest Recreation Facilities in the Liguria Region (Italy). London, Working Paper GEC 97-08, Centre for Social and Economic Research on the Global Environment.
- Bennagen, M E. 2005. Designing Payments for Watershed Protection Services Program: The REECS-PREM Experience. In: Padilla, J E , Tongson, E and R Lasco (eds), PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp 161-170.
- Bishop, J and N Landell-Mills. 2002. Forest Environmental Services: An Overview. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development. Earthscan Publications Ltd. London. pp 15 – 36. *

- Bojo, J. 1996. The Economics of Wildlife: Case Studies from Ghana, Kenya, Namibia and Zimbabwe. Washington, D.C., AFTES Working Paper No 19, Environmental Policy and Planning, World Bank.
- Boquiren, R. 2004 Rewards to Environmental Services in the Philippine Uplands: Constraints and Opportunities for Institutional Reform. (Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provide). World Agroforestry Centre, Indonesia. *
- Boquiren, R. 2005. Legal, Policy and Institutional Framework for Payments for Environmental Services (PES) in the Philippines: Opportunities and Challenges in the Forestry Sector. In: Padilla, J E , Tongson, E and R Lasco (eds), PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp 88-102.*
- Brand, D. 2001. Mechanisms to Encourage Private Capital Investments in the Environmental Services of Forests. International Workshop of Experts on Financing Sustainable Management of Forests. Norway: Hancock Natural Resources Group. *
- Brand, D. 2002. Investing in the Environmental Services of Australian Forests. In: Pagiola, S, Bishop, J, N Landell-Mills (eds), Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development. Earthscan Publications Ltd. London. pp 235 – 245. *
- Bui Dung, Dang Thanh Ha and Nguyen Quoc Chinh. 2004. Rewarding Upland Farmers for Environmental Services: Experience, Constraints and Potentials in Vietnam. (Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provide). World Agroforestry Centre (ICRAF), Indonesia. *
- Bulas, J M. 2004. Implementing Cost Recovery for Environmental Services in Mexico. Paper presented at World Bank Water Week, Washington, 24-26 February 2004.
- Bull, G, Harkin, Z and A Wong. 2002. Developing a Market for Forest Carbon in British Columbia. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development. Earthscan Publications Ltd. London. *
- Bloomfield, J, Ratchford, M and S Brown 2000. Land Use and Forestry in the Kyoto Protocol. in Mitigation and Adaptation Strategies for Global Change 5(1): 3.8.
- Boyd, E and M Scholze. 2002. Participatory Evaluation of the Noel Kempff Mercado Climate Action Project. Report for Fundación de Amigos de la Naturaleza and the Communities of Bajo Paragua.
- Brown, S, Burnham, M, Delaney, M, Powell, M, Vaca, R and A Moreno. 2000. Issues and Challenges for Forest-based Carbon Offset Projects: a Case Study of the Noel Kempff Climate Action Project in Bolivia. In Mitigation and Adaptation Strategies for Global Change 5(1): 99.121.
- Buenaventura, A M S, Rosales, R M P. Morales, A C, Amponin, J A R and C G S G Reyes. 2001. Estimating Development Fees for Game Fowl Farms Operating in Mt Kanla-on Natural Park. Conservation for Priority Protected Areas Project (CPPAP) Resource User Fee Study, A Technical Report, NGOs for Integrated Protected Areas (NIPA), Inc., Resources Environment and Economics Center for Studies (REECS), Inc., and DENR.
- Busch, C, Jayant, B, Sathaye, A and G Arturo Sanchez-Azofeifa. 2000. Estimating the Greenhouse Gas Benefits of Forestry Projects: A Costa Rican Case Study. Energy Analysis Department, Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory. Prepared for the U.S. Environmental Protection Agency, Climate Policy and Programme Division.

-
- Cadiz, P L and H P Calumpang. 2001. Analysis of Revenues from Ecotourism in Apo Island, Negros Oriental. Resources Environment and Economics Center for Studies (REECS), Inc., and DENR.
- Calderon, M M, Cruz, C A, Cereno, R P and F A Cruz. 2000. Market-Based Instrument for Forest Recreation and Ecotourism in the MFR. In: Francisco, H A, Dizon, J T and C S Torres (eds), *Economic Instruments for the Makiling Forest Reserve*. UPLB-CFNR-CEM-REECS, Inc.-EEPSEA-UNDP.
- Castro, E. 2001. Costa Rican Experience in the Charge for Hydro Environmental Services of the Biodiversity to Finance Conservation and Recuperation of Hillside Ecosystems. Paper presented at the International Workshop on Market Creation for Biodiversity Products and Services, OECD, Paris, 25-26 January 2001.
- Castro, L I. 2000. An Estimation and Valuation of the Carbon Storage Function of Angel River Watershed and Forest Area. The Philippine Environmental and Natural Resources Accounting Project (Phase IV), A Technical Paper, USAID and DENR.
- Chandler, F J C. 2004. Making Markets for Forest Communities: Linking Communities, Markets and Conservation in the Asia-Pacific Region-The RUPES Project. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea. *
- Changtragoon, S. 2004. Opportunities in Using the Conservation of Biodiversity to Alleviate Poverty in Thailand. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea. *
- Chen Gengchang. 2002. Development of China's Ecological Compensation Scheme as discussed in CCICED Western China Forest Grasslands Task Force. Workshop on Payment Schemes for Environmental Services: Summary of Proceedings. *
- Chomitz, K, Brenes, E and L Constantino. 1998. *Financing Environmental Services: The Costa Rican Experience and Its Implications*. The World Bank: America Management Unit, Latin America and the Caribbean Region. *
- Chomitz, K M. 2000. *Evaluating Carbon Offsets from Forestry and Energy Projects: How do They Compare?*. Washington DC: World Bank Development Research Group.
- Chua, T E. 2001. *Developing Sustainable Financing Mechanisms for Coastal and Marine Environmental Management*. GEF/UNDP/IMO Regional Programme on Partnerships in Environmental Management for the Seas of East Asia, Quezon City.
- CIFOR . 2000. *Capturing the Value of Forest Carbon for Local Livelihoods: Opportunities Under the Clean Development Mechanism of the Kyoto Protocol*. College Park: CIFOR/ University of Maryland.
- Cohen, S. 2002. Pro-poor Markets for Environmental Services. Carbon Sequestration and Watershed Protection. WSSD.
- Copper, J. 2001 Construction of a Fund for the Sharing of Benefits from the Utilization of Plant Genetic Resources for Food and Agriculture. *Environment and Development Economics* 6 (2001): 47-62.
- Cottle, P and C Crosthwaite-Eyre. 2002. Insuring Forest Sinks. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. pp 247 – 259. *
-

- Corcuera, E., C. Sepulveda and G. Geisse. 2002. Conserving Land Privately: Spontaneous Markets for Land Conservation in Chile. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. pp 127–149. *
- Cruz, L. 2005. Natural Products Research and Bioprospecting. In: Padilla, J E , Tongson, E and R Lasco (eds), *PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation*, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp 116-125.*
- Cuéllar, N, Herrador, D and M González. 1999. Trade in Environmental Services and Sustainable Development in Central America: The Cases of Costa Rica and El Salvador. International Institute for Sustainable Development, Canada.*
- Day, B. 2000. A Recreational Demand Model of Wildlife-Viewing Visits to the Game Reserves of Kwa Zulu Natal Province of South Africa. London, Working Paper GEC 2000-08, Centre for Social and Economic Research on the Global Environment.
- Daily, G C and K Ellison. 2002. *The New Economy of Nature and the Marketplace: The Quest to Make Conservation Profitable*. Island Press. Washington, D.C., U.S.A.
- de Groot, R, Wilson, M and R Boumans. 2002. A Typology for the Description, Classification and Valuation of Ecosystem Functions, Goods and Services. *Ecological Economics* 41 (3): 393-408.
- Delos Angeles, M S. 2003. Compensating the Philippines Upland Poor for Forest Ecosystem Services: Developing Menus of Tools and Strategies. Paper presented at the Spring 2003 Meeting of the International Society of Tropical Foresters: Ecosystem Services in the Tropics: Challenges to Marketing Forest Function, Yale University, April 5-6, 2003
- De Jong, B H, Tipper, R and G Montoya-Gómez. 2000. An Economic Analysis of the Potential for Carbon Sequestration by Forests: Evidence from Southern Mexico. In *Ecological Economics*, Vol. 33, pp. 313- 327.
- Dudley, N and S Stolton. 2003. *Running pure: The Importance of Forest Protected Areas to Drinking Water*. Washington: World Bank/ WWF Alliance for Forest Conservation.
- Echavarría, M. 2002. Water User Association in the Cauca Valley: A Voluntary Mechanism to Promote Upstream-Downstream Cooperation in the Protection of Rural Watersheds. *Land-water Linkages in Rural Watersheds Case Study Series*. Rome: Food and Agriculture Organization (FAO).
- Echavarria, M. 2002. *Financing Watershed Conservation: The FONAG Water Fund in Quito, Ecuador*. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. *
- Echavarria, M, Vogel, J, Alban, M and F Meneses. 2003. *The Impacts of Payment for Watershed Services in Ecuador: Emerging Lessons from Pimampiro and Cuenca*. International Institute for Environment and Development, London. *
- Emerton, L. 1998. Balancing the Opportunity Costs of Wildlife Conservation for the Communities Around Lake Mburo National Park, Uganda. *Evaluating Eden Discussion Paper EE DP 05*, International Institute for Environment and Development, London.
- Emerton, L. 1998. *Mount Kenya: The Economics of Community Conservation*. Community Conservation in Africa Paper No. 6, Institute for Development Policy and Management, University of Manchester.

-
- Emerton, L. A. 2001. The Nature of Benefits and the Benefits of Nature: Why Wildlife Conservation has not Economically Benefited Communities in Africa. In: Hulme, D and Murphree, M (eds), *African Wildlife and Livelihoods: The Promise and Performance of Community Conservation*. James Currey: Oxford.
- Emerton, L A and I Mfunda. 1999. *Making Wildlife Economically Viable for Communities Living Around the Western Serengeti, Tanzania*. London, International Institute for Environment and Development.
- Emerton, L and Y. Tessema. 2001. *Economic Constraints to the Management of Marine Protected Areas: the Case of Kisite Marine National Park and Mpunguti Marine National Reserve, Kenya*. IUCN Eastern Africa Regional Office, Nairobi, Kenya. *
- Environment and Natural Resources Committee. 2000. *Inquiry into the Utilization of Victorian Native Flora and Fauna: Report*, ENRC, Parliament of Victoria, Melbourne.
- Erdmann, M. n.d. *Case Study: Implementing a User Fee System in Bunaken National Park*. Online. *
- FAO. 2003. *Payment Schemes for Environmental Services in Watersheds*. Arequipa, Peru, 9–12 July: Regional Forum.
- FAO. 2000. *Global Forest Products Outlook Study*, Food and Agriculture Organization. Rome: Food and Agriculture Organization (FAO).
- FAO. 2004. *Payments for Environmental Services in Watersheds*. Rome, FAO. *
- Ferraro, P J. 2001. *Global Habitat Protection: Limitations of Development Interventions and a Role for Conservation Performance Payments*. *Conservation Biology*, 15:4, pp.1-12.
- Ferraro, P J and A Kiss. 2002. *Direct Payments for Biodiversity Conservation*. *Science*, 298, pp.1718-1719.
- Ferraro, P J and R D Simpson. 2001. *The Cost-Effectiveness of Conservation Payments*. Discussion Paper No. 00-31. Resources for the Future, Washington D.C.
- Ferraro, P. 2001. *Global Habitat Protection: Limitations of Development Interventions and a Role for Conservation Performance Payments*. *Conservation Biology* 15(4): 990.1000.
- Figueres, C (ed). 2002. *Establishing National Authorities for the CDM: A Guide for Developing Countries*. Winnipeg: International Institute for Sustainable Development/Centre for Sustainable Development in the Americas.
- Francisco, H, Dizon and J Torres. 2000. *Economic Instruments for the Makiling Forest Reserve*. University of the Philippines Los Baños. College of Forestry and Natural Resources, College, Laguna, Philippines.
- Francisco, H, Harder, D and M Penales. 2001. *Socioeconomic Impact Assessment of CPPAP: Mt. Kanlaon Natural Park*. Final report submitted to the NGOs for Integrated Protected Areas (NIPA), Philippines. October. NIPA Inc/REECS CPPAP Impact Assessment Study, Volume IV.
- Francisco, H. 2005. *The WHAT, the HOW, and the WHERE of Environmental Service Payments*. In: Padilla, J E , Tongson, E and R Lasco (eds), *PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation*, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp 25-33.*
- Francisco, H, Rivera, M, Perino, A, Florido, L, Castillo, E, Ebora, J and F Siapno. 2003. *Pricing of Philippine Grassland Resources*, pp. 141-161. *Economy and Environment: Selected Readings in the Philippines: Resources, Environment and Economics Center for Studies, Inc. and Economy and Environment Program for the Southeast Asia (EEPSEA)*, Philippines. *
-

- Freese, C H and D L Trauger. 2000. Wildlife Markets and Biodiversity Conservation in North America. *Wildlife Society Bulletin* 28 (1): 42-51.
- Guoyon, A. 2003. Rewarding the Upland Poor for Environmental Services: A Review of Initiatives from Developed Countries (Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provide). World Agroforestry Centre (ICRAF), Indonesia. *
- Gutman, P (ed). 2003. From Goodwill to Payments for Environmental Services: A Survey of Financing Options for Sustainable Natural Resource Management in Developing Countries. World Wide Fund: Macroeconomics for Sustainable Development Program Office. *
- Hadi, Y S and M B Saleh. 2004. Strategy for the Implementation of CDM and Carbon Trade in Indonesia. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea.*
- Haites, E and F Yamin. 2000. The Clean Development Mechanism: Proposals for its Operation and Governance. *Global Environmental Change* 10 (2000) 27-45.
- Harvard Institute for International Development. 2001. Promotion of Market-Based Instruments for Environmental Management. ADB TA 2951-PRC.
- Harrington, W, Morgenstern, R and T Sterner (eds). 2004. *Choosing Environmental Policy: Comparing Instruments and Outcomes in the United States and Europe*, Resources for the Future, Washington, DC.
- Heimlich, R. 2002. The U.S. Experience with Land Retirement for Natural Resource Conservation as discussed in CCICED Western China Forest Grasslands Task Force. Workshop on Payment Schemes for Environmental Services: Summary of Proceedings. *
- Hitchcock, P. 2000. The Economics of Protected Areas and the Role of Ecotourism in their Management. The World Commission on Protected Areas, Second South East Asia Regional Forum, Pakse, Lao PDR, 6-11 December 1999. Vientiane, IUCN - The World Conservation Union, Lao PDR Country Office.
- Hökby, S and T Söderqvist. 2001. Elasticities of Demand and Willingness to Pay for Environmental Services in Sweden. Paper presented at the 11th Annual Conference of the European Association of Environmental and Resource Economists, Southampton, UK, 28-30 June 2001.
- Hong, Y B and A Ng. 2000. Challenges in Sustaining Protected Areas and National Parks: A Preliminary Review of Entry Fees and Economic Valuation in Malaysia. WWF-Malaysia. *
- Hug, S. 2002. Applying Sustainable Development Criteria to CDM Projects: PCF Experience. PCF plus Report 10. Washington DC: World Bank.
- Isakson, R. 2002. Payments for Environmental Services in the Catskills: A Socio-economic Analysis of the Agricultural Strategy in New York City's Watershed Management Plan. Ford Foundation and Fundación PRISMA. *
- Iangkura, A. 1998. Environmental Valuation: An Entrance Fee System for National Parks in Thailand. IDRC-EPPSEA. *
- IIED (International Institute for Environment and Development). 1997. *Valuing the Hidden Harvest: Methodological Approaches for Local-Level Analysis of Wild Resources*. London, Sustainable Agriculture and

- Environmental Economics Programs, Research Series Volume 3, No. 4, International Institute for Environment and Development.
- IUCN. 2000. Financing Protected Areas Task Force of the World Commission on Protected Areas (WCPA) of IUCN, in collaboration with the Economics Unit of IUCN (2000) Financing Protected Areas. IUCN. Gland, Switzerland and Cambridge, UK. *
- Jensen, C. 2003. Development Assistance to Upland Communities in the Philippines. (Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provide). World Agroforestry Centre (ICRAF), Indonesia. *
- Jintao, X and U Schmitt (eds). 2002. Proceedings from the Workshop on Payment for Environmental Services: CCICED Task Force on Forests and Grasslands. China Forestry Publishing House. Beijing, China.
- Johnson, N, White, A and D Perrot-Maitre. n.d.⁹ Developing Markets for Water Services: Issues and Lessons from Innovators. Forest Trends, World Resources Institute and Katoomba Group. *
- Kallesoe, M and D De Alvis. 2004. Review of Developments of Environmental Services Markets in Sri Lanka. (Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provide). World Agroforestry Centre (ICRAF), Indonesia. *
- Kant, P. 2004. Policy Support for Enhancing Economic Returns from Smallholder Tree Plantations Using Carbon Credits and Other Forest Values. In: Sim, H C, Appanah, S and Y C Youn (eds), Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity. RAP Publications, South Korea.*
- Keenan, R, Davey, S, Grieve, A, Moran, B and J Donaldson. 2004. Market Mechanisms and Assessment Methods for Environmental Services from Private Forests in Australia. In: Sim, H C, Appanah, S and Y C Youn (eds), Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity. RAP Publications, South Korea, pp. 49-59. *
- Kerr, J. 2002. Watershed Development, Environmental Services, and Poverty Alleviation in India. *World Development*, 30:8, pp.1387-1400
- Kerr, J. 2002. Sharing the Benefits of Watershed Management in Sukhomajri, India. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. *
- Khare, A, Sarin, M, Saxena, N C, Palit, S, Bathla, S, Vania, F and M Satyanarayana. 2000. Joint Forest Management: Policy Practice and Prospects. International Institute for Environment and Development. London, U.K.
- Kloss, D. 2001. Guide to Sustainable Financing of Biodiversity and Protected Areas. A Compilation and Coarse Analysis of Financing Mechanisms at Different Levels for Project-Managers, their Counterparts and National/International Decision Makers. Sector Programme Protected Area Management and Buffer zone Development.
- Koch-Weser, M. B. 2002. Legal, Economic and Compensation Mechanisms in Support of Sustainable Mountain Development. A Thematic Paper Presented to Bishkek Global Mountain Summit. *
- Kristrom, B and M Boman. 2001. Valuing the Multiple Functions of Forests. In: Palo, M., Uusivuori, J and G Mery (eds), *World Forests, Markets and Policies*. Volume III, pp. 149–158. Dordrecht/Boston/London, Kluwer Academic Publishers/World Forests.

⁹ n.d. means no date

- Kumar, N and N C Saxena. 2002. India's Forests: Potential for Poverty Alleviation. In: U Lele (ed), *Managing a Global Resource: Challenges of Forest Conservation and Development*. World Bank Series on Evaluation and Development, Volume 5. Transaction Publishers: New Brunswick.
- Laird, S. and K ten Kate. 2002. Linking Biodiversity Prospecting and Forest Conservation. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. *
- Landell-Mills, N. 2002. *Marketing Forest Environmental Services: Who Benefits?* Gatekeeper Series No. 104. London: International Institute for Environment and Development. *
- Landell-Mills, N and L Porras. 2002. "Silver bullet or fools' gold? A Global Review of Markets for Forest Environmental Services and their Impact on the Poor". Instruments for Sustainable Private Sector Forestry Series. International Institute for Environment and Development, London. *
- Landell-Mills, N and L Porras. 2002b. How Can Markets for Environmental Services be Pro-poor? London: Forestry and Land Use Program (FLU), IIED.
- Landell-Mills, N, Spears, J and A Gupta. 2002. Forest Integrity Network (FIN): Background and concept paper. Transparency International. 10 pp.
- Lanna, Antonio. 2003. "Water Charges in Brazil: Implementation and Perspectives." In: *Water Pricing and Public-Private Partnerships in the Americas*, Inter-American Development Bank.
- Lasco, R, Pulhin, F B, Roshetko, J and M R Banaticla. 2004. LULUCF Climate Change Mitigation Projects: A Primer. World Agroforestry Centre. Southeast Asia Regional Research Programme. *
- Lasco, R and F Pulhin. 2004. Carbon Budgets of Tropical Forest Ecosystems in Southeast Asia: Implications for Climate Change. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea. *
- Lasco, R, Pulhin, F and M R Banaticla. 2005. Opportunities and Challenges in Environmental Service Payments: Carbon Sequestration. In: Padilla, J E, Tongson, E and R Lasco (eds), *PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation*, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp 50-61. *
- Lecocq, F and K Capoor. 2005. State and Trends of the Carbon Market 2005. Washington DC, International Emissions Trading Association. *
- Lele, U, Viana, V M and A Verissimo. 2002. Brazil's Forests: Managing Tradeoffs among Local, National, and International Interests. In: U Lele (ed), *Managing a Global Resource: Challenges of Forest Conservation and Development*. World Bank Series on Evaluation and Development, Volume 5. Transaction Publishers: New Brunswick.
- Li Zhiyong. 2004. A Policy Review on Watershed Protection and Poverty Alleviation by the Grain for Green Programme in China. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea. *
- Lindberg, K and B Aylward. 1999. "Price Responsiveness in the Developing Country Nature Tourism Context: Review and Costa Rican Case Study". *Journal of Leisure Research* 31 (3): 281-299.

-
- Lindberg, K and E Halpenny. 2001. Protected Area Visitor Fees: Country Review. A Paper Presented at TNC Workshop on Sustainable Financing for Marine National Parks Based on Tourism Revenues. Bali, Indonesia.*
- Liu Yongchun. 2002. Local Experience with the Ecological Compensation Scheme in Anhui Province as discussed in CCICED Western China Forest Grasslands Task Force. Workshop on Payment Schemes for Environmental Services: Summary of Proceedings.*
- Lloret Zamora, P. 2002. The Watershed Council as a Mechanism for Upstream-Downstream Cooperation: The Case of the Río Machángara, Cuenca, Ecuador. Land-Water Linkages in Rural Watersheds Case Study Series. Rome: FAO.
- McNally, R and M S H Othman. 2002. Environmental Economics: A Practical Guide. Malaysia: WWF-UPM.
- Malavasi, E and J Kellenberg. Program of Payments for Ecological Services in Costa Rica. Downloaded from the Internet.*
- May, P H, Veiga Neto, F, Denardin, V and W Loureiro. 2002. Using Fiscal Instruments to Encourage Conservation: Municipal Responses to the 'Ecological' Value-added Tax in Parana and Minas Gerais, Brazil. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development. Earthscan Publications Ltd. London.*
- May, P H, Boyd, E, Veiga Neto, F and M Chang. 2004. Local Sustainable Development Effects of Forest Carbon Projects in Brazil and Bolivia: A View from the Field. International Institute for Environment and Development, London.*
- Mayrand, K and M Paquin. 2004. Payments for Environmental Services: A Survey and Assessment of Current Schemes. Commission for Environmental Cooperation of North America.*
- Meinzen-Dick, R, Knox, A, Place, F and B Swallow (eds). 2002. Innovation in Natural Resource Management: The Role of Property Rights and Collective Action in Developing Countries. Baltimore: Johns Hopkins University Press for IFPRI.
- Maher, H. 2000. A National System for Raising Money for Conservation in New Zealand in Financing Protected Areas Task Force of the World Commission on Protected Areas (WCPA) of IUCN, in collaboration with the Economics Unit of IUCN (2000) Financing Protected Areas. IUCN. Gland, Switzerland and Cambridge, UK.*
- Milne, M, Arroyo, P and H Peacock. 2001. Assessing the Livelihood Benefits to Local Communities from Forest Carbon Projects: Case Study Analysis. in Forest Carbon, Livelihoods and Biodiversity. Report submitted to the European Union.
- Martin, A. 2000. The Contribution of Ecotourism Activities within the KwaZuluNatal Nature Conservation Service as discussed in Financing Protected Areas Task Force of the World Commission on Protected Areas (WCPA) of IUCN, in collaboration with the Economics Unit of IUCN (2000) Financing Protected Areas. IUCN. Gland, Switzerland and Cambridge, UK.*
- Milne, M and P Arroyo. 2004. Assessing the Livelihood Benefits to Communities from the Profafor Carbon Sequestration Project, Ecuador. (Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provide). World Agroforestry Centre (ICRAF), Indonesia.*
- Miranda, M, Porras, I T and M L Moreno. 2003. The Social Impacts of Payments for Environmental Services in Costa Rica. A Quantitative Field Survey and Analysis of the Virilla Watershed. International Institute for Environment and Development, London.*
- Murtough, G, Aretino, B, and A Matysek. 2002. Creating Markets for Ecosystem Services-
-

- A Productivity Commission Staff Research Paper. AusInfo, Canberra. *
- National Center for Environmental Economics (NCEE). 2001. The United States Experience with Economic Incentives for Protecting the Environment. Report No.EPA-240-R-01-001. Washington; United States Environmental Protection Agency.
- Niles, J, Brown, S, Pretty, J, Ball, A and J Fay. 2003. Potential Carbon Mitigation and Income in Developing Countries from Changes in Use and Management of Agricultural and Forest Lands. In Capturing Carbon and Conserving Biodiversity: The Market Approach. Earthscan Publications. London, U.K.
- Norbu, L. 2004. Nature Conservation and Biodiversity for Poverty Reduction — Case of Bhutan. In: Sim, H C, Appanah, S and Y C Youn (eds), Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity. RAP Publications, South Korea. *
- OECD. 2003. Harnessing Markets for Biodiversity: Towards Conservation and Sustainable Use. OECD Paris. *
- Orlando, B, Baldock, D, Canger, S, Mackensen, J, Maginnis, S, Manguiat, M S, Rietbergen, S, Robledo, C and N Schneider. 2002. Carbon, Forests, and People: Towards the Integrated Management of Carbon Sequestration, the Environment, and Sustainable Livelihoods. IUCN-The World Conservation Union. Cambridge, U.K.
- Padilla, J E, Ansula, A and M Tolosa. 2005. Getting Users to Pay for Conservation: A Guide to Site-Based Sustainable User Fee Schemes. WWF-Philippines, Quezon City, Philippines. *
- Padilla, J E and C Ulep. 1999. A Framework for the Formulation of Market-Based Instruments and Other Mechanisms for the Sustainable Financing and Management of Protected Areas in the Philippines. ENRAP, Philippines.
- Padilla, J E, Ulep, C, Rosales, R M P, Meniado, A, Blastique, T, Cabrera, S J, Corcuera, E and R Buen. 2000. Manual for the Implementation of the Fee System Guidelines in Protected Areas. The Philippine Environmental and Natural Resources Accounting Project (Phase IV), A Technical Paper, USAID and DENR.
- Padilla, J E, Ansula, A, Bazan, L and M Tolosa. 2003. Conservation Finance Mechanisms for Puerto Galera. A Paper presented at Coastal Zone Philippine Conference and Network, March 17-19, 2004. Cebu City.
- Pagiola et al. 2003a. Can Payment for Environmental Services Help Reduce Poverty? An Exploration of the Issues and the Evidence to Date. Washington, DC: World Bank.
- Pagiola et al. 2003b. Paying for the Environmental Services of Protected Areas: Involving the Private Sector. Durban, South Africa, 8–17 September 2003. Fifth World Parks Congress, Sustainable Finance Stream.
- Pagiola, S. 1998. Economic Analysis of Incentives for Soil Conservation. In: Sanders, D W, Huszar, P C, Sombatpanit, S and T Enters (eds), Using Incentives for Soil Conservation. World Association of Soil and Water Conservation, International Board for Soil Research and Management, and the Soil and Water Conservation Society of Thailand. Science Publishers, Inc. *
- Pagiola, S. 2002. Paying for Water Services in Central America: Learning from Costa Rica. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development. Earthscan Publications Ltd. London. *
- Pagiola, S and I Ruthenberg. 2002. Selling Biodiversity in a Coffee Cup: Shade Grown Coffee and Conservation in Mesoamerica. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), Selling Forest Environmental Services: Market-based Mechanisms for Conservation and

-
- Development. Earthscan Publications Ltd. London. *
- Pagiola, S, Bishop, J and N Landell-Mills. 2002. Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development. Earthscan Publications Ltd. London. *
- Pagiola, S, Agostini, P, Gobbi, J, de Haan, C, Ibrahim, M, Murgueitio, E, Ramírez, E, Rosales, M, and J P Ruiz. 2004. Paying for Biodiversity Conservation Services in Agricultural Landscapes. Environment Department No. 96. Washington D.C.: The World Bank Environment Department. *
- Pagiola, S, Landell-Mills, N, J. 2002. Market-based Mechanisms for Forest Conservation and Development. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development. Earthscan Publications Ltd. London. *
- Pagiola, S and G. Platais 2003. Implementing Systems of Payments for Environmental Services: Initial Lessons of Experience. Paper presented at the Workshop on Ecosystem Services in the Tropics: Challenges to Marketing Forest Function, Spring 2003 Meeting of the International Society of Tropical Foresters, Yale University, 5-6 April 2003.
- Pagiola, S, Platais, G and A Arcenas. 2003. Ensuring the Poor Benefit from Systems of Payments for Environmental Services. Paper presented at the Workshop on Reconciling Rural Poverty Reduction and Resource Conservation: Identifying Relationships and Remedies, Cornell University, Ithaca, NY, 2-3 May 2003.
- Pagiola, S, and G Platais. 2003. Implementing Systems of Payments for Environmental Services: Initial Lessons of Experience. Paper presented at the Workshop on Ecosystem Services in the Tropics: Challenges to Marketing Forest Function, Spring 2003 Meeting of the International Society of Tropical Foresters, Yale University, 5-6 April 2003.
- Palo, M. 2003. Evolution of Sustainable Forest Management in Finland with Impacts of Globalization. Proceedings of the International Conference on Integrative Approaches towards Sustainability. Baltic Sea Region taking the lead, pp. 60–69. Riga, University of Latvia.
- Palo, M. 2004. Poverty Reduction by Tropical Forests: A Rhetoric or Viable Option. In: Sim, H C, Appanah, S and Y C Youn (eds), Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity. RAP Publications, South Korea. *
- Panayotou, T. 1998. Instruments of Change: Motivating and Financing Sustainable Development. Earthscan; London.
- Pannell, D. 2000. Market-Based Mechanisms, Financial Incentives and Other Institutional Innovations: Assessing Their Potential for Addressing Dryland Salinity. Sustainability and Economics in Agriculture. GRDC Project, University of Western Australia, Working Paper 00/09.
- Pennington, M. 2005. Payments for Environmental Services: Annotated Bibliography. Winrock International.
- Perez, L. 2005. Asian Conservation Company and Investments in Ten Knots Group/ El Nido Resorts. In: Padilla, J E, Tongson, E and R Lasco (eds), Proceedings of the National Conference-Workshop for Payments of Environmental Services. Philippines: WWF/ICRAF/REECS/CARE/UP. pp. 144-150.*
-

-
- Perrot-Maître, D and P Davis. 2001. Case Studies of Markets and Innovative Financial Mechanisms for Water Services from Forests. Forest Trends. Washington, D.C., U.S.A.
- Pfaff, A, Kerr, S, Hughes, F, Liu, S, Sanchez, G, Schimel, D, Tosi, J and V Watson. 2000. The Kyoto Protocol and Payments for Tropical Forest: An Interdisciplinary Method for Estimating Carbon-offset Supply and Increasing the Feasibility of a Carbon Market under the CDM. *Ecological Economics*, 35:2.
- Pham Khanh Nam and Tran Vo Hung Son. 2001. Recreational Value of the Coral Surrounded Hon-Mun Islands in Vietnam.
- Powell, I, White, A and N Landell-Mills. 2001. Developing Markets for Ecosystem Services of Forests. Forest Trends. Washington, D.C., U.S.A.
- Qu Jiashu. 2002. Local Experience with the Ecological Compensation Scheme in Guangdong Province as discussed in CCICED Western China Forest Grasslands Task Force. Workshop on Payment Schemes for Environmental Services: Summary of Proceedings. *
- Ramos, A. 2005. Introduction to Clean Development Mechanism (CDM). In: Padilla, J E, Tongson, E and R Lasco (eds), PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp. 151-158.*
- Rietbetgen-McCracken, J and H Abaza. 2000. Environmental Valuation: A Worldwide Compendium of Case Studies. London, United Nations Environment Program and Earthscan Publications Ltd.
- Rivera, M, Alcalde, J, Malocloc, L and H A Francisco. 2000. Water Resources and Economic Instruments for Laguna Lake. The Philippine Environmental and Natural Resources Accounting Project (Phase IV), A Technical Paper, USAID and DENR.
- Rojas, M and B Aylward. 2002. The Case of La Esperanza: A Small, Private, Hydropower Producer and Conservation NGO in Costa Rica. Land-water linkages in rural watersheds case study series. Rome: Food and Agriculture Organization.
- Rojas, M and B Aylward. 2003a. Initiatives Based on Payments and Markets for Environmental Services in Costa Rica. London: International Institute for Environment and Development (IIED), Environmental Economics Program (EEP).
- Rojas, M and B Aylward. 2003. What are we Learning from the Experiences with Markets for Environmental Services in Costa Rica? A Review and Critique of the Literature. International Institute for Environment and Development, London. *
- Rosa, H, Kandel, S, Dimas, L and E Mendez. 2002. Payments for Environmental Services and Rural Communities: Lessons from the Americas. University of Massachusetts Amherst: Political Economy Research Institute. *
- Rosales, R M. 2003. Developing Pro-poor Markets for Environmental Services in the Philippines. International Institute for Environment and Development, London. *
- Rosales R M and M S delos Angeles. 2001. Estimating Watershed Protection Service Fees for Extraction of Spring Water from Mt. Kanla-on Natural Park (MKNP). Final report submitted to the NGOs for Integrated Protected Areas (NIPA), Philippines. NIPA Inc/REECS Resource User Fee Study 1 September.
- Rosales, R M P. 2001. Estimating Recreational Values of the Sohoton Natural Bridge National Park. Samar Island Biodiversity Study (SAMBIO), A Technical Paper, Resources, Environment and Economics Center for Studies (REECS), Inc. and USAID.
-

- Rosales, R M P, Buen, R T, Matubis, I F, Zabala, N A and M T I Escubio. 2002. Estimating Development Fees for Tourism Establishments Located at Siargao Island Protected Landscape and Seascape in CPPAP Resource User Fee Study Technical Reports. NGOs for Integrated Protected Areas (NIPA), Inc., Resources Environment and Economics Center for Studies (REECS), Inc. and DENR.
- Rosales, R M P. 2003. A Survey to Estimate the Recreational Value of Selected MPAs: Moalboal-Cebu, Siquijor and Pamilacan Island-Bohol. Coastal Conservation and Education Foundation, Inc. Banilad, Cebu City.
- Rosales, R M P and C G S G Reyes. 2001., Estimating Appropriate Entrance Fees for Scuba Divers at Apo Reef Natural Park. Conservation for Priority Protected Areas Project (CPPAP) Resource User Fee Study, A Technical Report, NGOs for Integrated Protected Areas (NIPA), Inc., Resources Environment and Economics Center for Studies (REECS), Inc. and DENR.
- Salas, J. 2005. Environmental Service Payments for the Maasin Watershed: A Case Study. In: Padilla, J E , Tongson, E and R Lasco (eds), PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation, Manila, March 1-2 2005, WWF, ICRAF, REES, UP-CIOS, UPLB-ENFOR, CARE. pp. 103-115.
- Salzman, J and J B Ruhl, 2002. Paying to Protect Watershed Services: Wetland Banking in the United States. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development. Earthscan Publications Ltd. London. *
- Satyanarayana, M and M How. 2004. Forest Producers and Rural Farmers can Benefit from the Clean Development Mechanism. In: Sim, H C, Appanah, S and Y C Youn (eds), Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity. RAP Publications, South Korea.*
- Scherr, S, White A and A Khare. 2004. Current Status and Future Potentials of Markets for Ecosystem Services of Tropical Forests: An Overview. International Tropical Timber Council. *
- Scherr, S. 2002. Factors to Consider in Choosing Instruments to Promote Environmental Services as discussed in CCICED Western China Forest Grasslands Task Force. Workshop on Payment Schemes for Environmental Services: Summary of Proceedings. *
- Scherr, S and A Martin. 2000. Developing commercial markets for environmental services of forests. Katoomba Workshop II proceedings and summary of key issues. Vancouver and Parksville, British Columbia, Canada.
- Sedjo, R A. 1999. Potential for Carbon Forest Plantations in Marginal Timber Forests: The Case of Patagonia, Argentina Washington, D.C.; Resources for the Future Discussion Paper 99-27.
- Sherman, A (ed). 2003. Conservation Finance E-Resources: A Compendium of Examples for Self-Sustaining Projects to Protect Wildlife and the Environment. World Wide Fund.
- Sherman, A. 2003. Conservation Finance e-Resources: A Compendium of Examples for Self-Sustaining Projects to Protect Wildlife and the Environment. World Wildlife Fund-Center for Conservation Finance. *
- Simpson, R D. 2001. Bio-prospecting as a Conservation and Development Policy: Overview and Insights from Three Cases. Prepared for an international workshop of the OECD Working Group on the Economic Aspects of Biodiversity. Paris: OECD.
- Smith, J and S J Scherr. 2002. Forest Carbon and Local Livelihoods: Assessment of Opportunities

- and Policy Recommendations. Occasional Paper No. 37. Center for International Forestry Research and Forest Trends. Bogor, Indonesia.
- Snider et al. 2003. Policy Innovations for Private Forest Management and Conservation in Costa Rica. *Journal of Forestry* 101(5): 18–23. Maryland: Society of American Foresters.
- Spergel, B. n.d. Raising Revenues for Protected Areas: A Menu of Options. Washington, D.C.: WWF Center for Conservation Finance. *
- Stavins, R. 2003. "Experience with Market-Based Environmental Policy Instruments." In: Maler, K G and J Vincent (ed), *The Handbook of Environmental Economics*. North- Holland/ Elsevier, Amsterdam.
- Sterner, T. 2002. Policy Instruments for Environmental and Natural Resource Management. Resources for the Future. Washington, DC.
- Stoneham, G, Chaudhri, V, Ha, A and L Strappazzon. 2002. Auctions for Conservation Contracts: An Empirical Examination of Victoria's Bush Tender Trial. Australia: Department of Environment and Natural Resources and Melbourne Business School. *
- Sun, C. 2002. Reflections on China's Forest Ecological Compensation Fund. In: Xu Jintao and Ulrich Schmitt (eds), *Workshop on Payment Schemes for Environmental Services: Proceedings*, pp. 28-30. CCICED Task Force on Forests and Grasslands. China Forestry Publishing House. Beijing, China.
- Suyanto, S B, Leimona, R, Permana, P and F J C Chandler. 2004. Review of Developments of Environmental Services Markets in Indonesia. (Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provide). World Agroforestry Centre (ICRAF), Indonesia. *
- Svarstad, H, Dhillon, S S and H C Bugge 2000. From Norway to Novartis: Bio-prospecting within an Open Access Regime. *Biodiversity and Conservation*, 9(11).
- Swingland, I (ed). 2002. *Capturing Carbon and Conserving Biodiversity: The Market Approach*. Earthscan. Sterling, Virginia, U.S.A.
- Tarrant, J and R Merrill. 1998. Technical Report: Conservation Financing: Program Alternative for Nature Conservation in Indonesia. The Natural Resources Management/EPIQ Program. Jakarta, Indonesia.
- Tipper, R. 2002. Helping Indigenous Farmers to Participate in the International Market for Carbon Services: The Case of Scolel Te. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. *
- The World Agroforestry Centre. 2001. Project design for the project "Rewarding Upland Poor for the Environmental Services They Provide". Bogor, Indonesia, ICRAF.
- TNC and CCED. 2001. *The Forest Bank. The Nature Conservancy and the Center for Compatible Economic Development*. Arlington, Virginia, U.S.A.
- Trieu Van Hung. 2004. The Role of Forestry in Poverty Reduction, Biodiversity Conservation and Clean Development Mechanism (CDM) in Viet Nam. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea. *
- Tognetti, S. 2001. *Creating Incentives for River Basin Management as a Conservation Strategy: A Survey of the Literature and Existing Initiatives*. U.S. World Wildlife Fund, Ecoregion Conservation Strategies Unit. Washington, D.C., U.S.A.

- Tolosa, M. and J E Padilla. 2005. Financing the Conservation of Whale Sharks and their Habitats in Donsol, Sorsogon, Philippines.. Unpublished report to WWF-Philippines.
- Tongson, E and M. Dygico. 2004. User Fee System for Marine Ecotourism: The Tubbataha Reef Experience. *Coastal Management*. 32:17-23. *
- Tongson, E. 2005. Payments for Landscape/ Seascape Beauty. 2005. In: Padilla, J E , Tongson, E and R Lasco (eds), PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp. 62-73.
- Tongson, E. 2005. Payments for Seascape Beauty: The Case of Tubbataha Reef National Marine Park. In: Padilla, J E , Tongson, E and R Lasco (eds), PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp. 133-143.
- Totten, M. 2000. Getting it Right: Emerging Markets for Storing Carbon in Forests. World Resources Institute.
- Tsen et al. 2002. Payments for Environmental Services in Mexico. Berkeley: University of California at Berkeley, Goldman School of Public Policy. Unidad Regional de Asistencia Técnica (RUTA). Ruta en Centroamérica. Boletín trimestral (25), December 2003.
- UNEP. 2004. Economic Instruments in Biodiversity-related Multilateral Agreements. UNEP Publication, Geneva. *
- UNEP. 1999. Environmental Impacts of Trade Liberalization and Policies for the Sustainable Management of Natural Resources: A Case Study on Romania's Water Sector. UNEP-New York and Geneva. *
- UNEP. 1998. Economic Instruments for Environmental Management: A Worldwide Compendium of Case Studies. UNEP Environmental Economics Series No. 25. New York and Geneva.
- Uri, N D and H Bloodworth. 2000. Global Climate Change and the Effect of Conservation Practices in US Agriculture. *Global Environmental Change* 10 (2000) 197-209.
- Veríssimo, A, Alves, Y L B, da Costa, M P, De Carvalho, C R, Born, G C C, Talocchi, S and R H Born. 2002. Payments for Environmental Services: Brazil. FORD Foundation and Fundación PRISMA. *
- Vogel, J H. 1996. The Successful Use of Economic Instruments to Foster Sustainable Use of Biodiversity: Six Case Studies from Latin America and the Caribbean. *Bio-policy Journal* Volume 2 Paper 5 (PY 97005). Great Britain.
- Von Platen, H. 1999. "Payments for environmental services: a new slogan for old incentives or a new economic concept?" GFA (Gesellschaft für Agrarprojekte) Natural Resources Management between Economic Development and Nature Conservation: Experiences from Development Projects in Asia, Latin America and Africa. Wissenschaftsverlag Vauk Kiel KG. p. 21-30. GFA-Studien (Germany), no. 4.
- World Bank and World Wildlife Fund Alliance for Forest Conservation and Sustainable Use. 2003. *Running Pure: The Importance of Forest Protected Areas to Drinking Water*. Washington, DC: World Bank and WWF.
- World Bank. 2001. Payments for Environmental Services Initiative. <http://www-esd.worldbank.org/eei>.
- OECD. 1994. *Managing the Environment: The Role of Economic Instruments*. OECD-Paris.
- World Bank. 2000. Ecomarkets project: Project appraisal document. Report No.20434- CR. Washington, DC: World Bank.

-
- World Bank. 2002a. Market-based Mechanisms for Conservation and Development. Annual Review: July 2001–June 2002.
- WWF International. 1998. From Theory to Practice: Incentive Measures in Developing Countries, WWF International, Gland.
- WWF-UK. 1998. The Distributional Impacts of Ecological Tax Reform. WWF-UK Report, Godalming.
- Wunder, S. 2005. Payments for Environmental Services: Some Nuts and Bolts. Center for International Forestry Research, Indonesia. *
- Yeo-Chang Youn and Jaekyong Chun. 2004. Inter-regional Partnership for Watershed Conservation in Korea. In: Sim, H C, Appanah, S and Y C Youn (eds), Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity. RAP Publications, South Korea. *
- Zelek, C A and G E Shively. 2003. Measuring the Opportunity Cost of Carbon Sequestration in Tropical Agriculture” Land Economics, 79:3, pp.342-354.
- Zoumin, S. 2004. Biodiversity Resources, Economic Values and Conservation in China. In: Sim, H C, Appanah, S and Y C Youn (eds), Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity. RAP Publications, South Korea. *
-
- _____. 2002. Investigating New Approaches: A Review of Natural Resource Management Pilots and Programs in Australia that Use Market-based Instruments. Australia: A joint initiative of all States Territories and the Commonwealth under the National Action Plan on Salinity and Water Quality. *
-
- _____. 2005. International Experiences with Economic Incentives for Protecting the
-
- Environment. Office of Policy, Economics and Innovation- U.S. Environmental Protection Agency, Washington.*

III. ANNOTATED BIBLIOGRAPHY

1. Alix, J, de Janvry, A and E. Sadoulet. 2003. *Payments for Environmental Services: To Whom, Where and How Much?* Paper prepared for INE/CONAFOR/World Bank Workshop on Payments of Environmental Services, Guadalajara, Mexico.

Geographic Coverage:	Mexico, national
Environmental Asset and Type of Service:	Forests: all services from forest lands
Other Information:	Buyer: Government; Sellers: Communities; Broker: Government
Abstract / Summary	

The paper is a comparative analysis of four alternative environmental incentive programmes on the effects that design can have on efficiency. It compares these four alternatives against the pilot programme where communities receive cash in exchange for an agreement to manage forest, reforest or implement other conservation-friendly resource management schemes. The overall objective is to slow down the rate of deforestation. The alternatives differ on the basis of computing rewards to communities, which include opportunity costs, environmental benefits, predicted environmental benefits and maximum benefits/costs. The indicators used in the comparisons include the following: percentage of *ejidos* enrolled, hectares enrolled, total cost of payment, total environmental benefits, hectares at risk enrolled, average payment, Gini coefficient, and median payment per hectare at risk.

2. Australian and New Zealand Environment and Conservation Council. *Benchmarking and Best Practice Program: User Pays Revenue*. A Paper Presented at TNC Workshop on Sustainable Financing for Marine National Parks Based on Tourism Revenues. Bali, Indonesia, 26-30 November 2001.

Geographic Coverage:	Australia and New Zealand
Environmental Asset and Type of Service:	Terrestrial and marine protected areas: landscape/seascape beauty; recreation
Other Information:	<i>Buyers:</i> Tourists, photographers, recreationists; <i>Sellers:</i> Government agencies responsible for protected area management (e.g. Queensland Parks and Wildlife Service)
Abstract / Summary:	

The Australian and New Zealand Environment and Conservation Council conducted benchmarking and best practice investigations in a number of key operations common to all conservation agencies. It has done comparative benchmarking of outcomes (cost-effectiveness, conservation management improvement and client and service facilities) and processes (revenue raising, promotion of public awareness and acceptance of user pays, staff training and support, distribution of funds and linking commercial operations to conservation objectives. Results of the benchmarking process show that revenue-raising on protected areas have been accepted throughout Australian nature conservation agencies as a necessary adjunct to central funding. The experience of the agencies under study has shown that *user pays* have many benefits if the systems can achieve cost-effectiveness. Moreover,

when revenue is retained by the agency, it can contribute to improved conservation management and better user facilities and services.

3. **Aretino, B, Holland, P, Matysek, A and D Peterson. 2001. *Cost-Sharing for Biodiversity Conservation: A Conceptual Framework*. Productivity Commission Staff Research Paper, AusInfo, Canberra.**

Geographic Coverage: Australia

Environmental Asset and Type of Service: Various (World heritage areas, national parks and natural reserves): biodiversity conservation

Other Information: *Buyers:* Various; *Sellers:* Various

Summary:

This paper discusses the market incentives and cost-sharing principles for individuals to conserve biodiversity. It highlights some issues as to which principle should be adopted as the basis for cost-sharing arrangements in biodiversity conservation. It asserts that clarifying property rights is a fundamental step in determining the appropriate cost-sharing principle and arrangements. As these can have significant social implications, it is imperative to conduct an assessment of efficiency and equity aspects of each principle.

4. **Arocena-Francisco, H. 2003. Environmental Service “Payments”: Experiences, Constraints and Potential. In: *The Philippines Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provide*. World Agroforestry Center (ICRAF): Indonesia.**

Geographic Coverage: Philippines

Environmental Asset and Type of Service: Forests: watershed protection

Other Information: *Buyers:* Various (water users, hydroelectric consumers, bioprospecting firms, water district and hydropower firms, generator of carbon gases; *Sellers:* Various (International Agencies: GEF, WB, USAID, etc.; Government: (DENR, LGU, State Colleges/Universities; Private/ Business Sector: (Water Districts, Hydropower Plants, Water Bottling Co.; and upland farmers

Summary:

This paper reviews the form of incentives or rewards that have been provided to upland communities under different management leaderships and in a number of sites in the Philippines. It also discusses what the upland farmers have to do in return for these rewards. The goal of such a review is to evaluate what elements are present in these communities that will support an environmental reward system and, in the process, assess the potential of the case study sites for inclusion in RUPES. This paper is divided into three parts: The first part briefly presents the situations with regard Environmental Service Payments (ESP) and environmental service provisions in a number of forest communities in the country. This is followed by a discourse of the key observations discerned from the cases analysed. The concluding part identifies the issues that must be resolved in the design and institutionalization of ESP system in Philippine watersheds.

Case 1 The Makiling Forest Reserve (MFR): Managed by the University of the Philippines

Geographic Coverage:	Laguna, Philippines
Environmental Asset and Type of Service:	Forest: watershed protection
Other Information:	<i>Buyers:</i> Water users (industrial and household), recreationists, and other off-site beneficiaries; <i>Sellers:</i> Upland farmers

Abstract / Summary:

This paper provides a chronological discussion on the actions taken by the University of the Philippines-Los Baños and various stakeholders on the reports of poor water quality in some areas and inadequate supply during the dry season. These actions include the formulation of the Master Plan for the Makiling Forest Reserve. There are, however, not enough funds to implement the projects embodied in the Makiling Forest Reserve Master Plan. To address this concern, the University has initiated efforts to develop watershed protection fee to be imposed upon various downstream water users. The major bottleneck to this effort of imposing a watershed protection fee is the legal basis of such a collection. Though the University has claimed that it has the legal authority by virtue of the RA 6967 and EO 349, it is not clear if these bases will hold water in the legal court. Alternative possibilities under discussions are collaboration with the National Water Resources Board or the local government unit. Certain sectors of the University fear that bringing in the local government unit into the picture may jeopardize the function of MFR as social laboratory.

Case 2 Maasin Watershed: Management Spearheaded by LGU with Multiple Funding Sources

Geographic Coverage:	Iloilo, Philippines
Environmental Asset and Type of Service:	Forest: watershed protection
Other Information:	<i>Buyer:</i> Metro Iloilo Water District (MIWD); <i>Seller:</i> Local Government

Abstract / Summary:

This paper provides a discussion on the actions taken by the provincial, local government and other government agencies to rehabilitate Maasin watershed. By virtue of the Local Government Code, the local government unit of Maasin was able to demand in court that the Metro Iloilo Water District pay 1 per cent of the district's gross revenue for its use of (portions) the watershed. Part of the payment is expected to be used for the protection of the Maasin Watershed.

Case 3 The Northern Sierra Madre Natural Park (NSMNP): Managed by Plan International (an NGO) with funding from EU and USAID

Geographic Coverage:	Sierra Madre Areas, Philippines
Environmental Asset and Type of Service:	Forests: mainly watershed protection
Other Information:	<i>Buyers:</i> Upland communities; <i>Sellers:</i> Projects, Local Government Units
Abstract / Summary:	

The Northern Sierra Madre Natural Park is managed through foreign funding. Various programmes have been initiated to mitigate the continuous loss of forest resources in the park. These include the Conservation cum Development Project and the community-based forest management projects under the Natural Resources Management Program Forestland Regeneration and Related Research. The local government unit and communities were tapped to provide counterpart funding mainly through supplies and labor or in-service.

Case 4 Mount Kanlaon, Negros Occidental

Geographic Coverage:	Negros Occidental, Philippines
Environmental Asset and Type of Service:	Forest: watershed protection
Abstract / Summary:	

This paper maintains that high-level environmental consciousness and organization of upland dwellers are a result of the interventions that play a big role in the protection, conservation, and management of the area. These characteristics of the communities combined with the enactment of the NIPAS Law show the potential of developing RUPES in the area.

5. Athanas, A, Vorhies, F Ghersi, F, Shadie, P and J. Shultis. 2001. *Guidelines for Financing Protected Areas in East Asia*. IUCN, Gland, Switzerland and Cambridge, UK.

Geographic Coverage:	East Asia
Environmental Asset and Type of Service:	Forest protected areas: various
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various

Abstract:
This document is prepared to help protected area planners and managers develop financing mechanisms to sustain conservation efforts in the East Asia Region. It advocates the use of a “business approach” to protected area management. This document provides the general principles involved and emphasizes that business plans must be subordinate to the conservation aims of the protected area. This document discusses 11 types of financial mechanisms — government allocations; taxes, levies, surcharges and subsidies; user fees; cause-related marketing; debt-for-nature swaps; joint implementation projects and carbon offsets; grants from multilateral/bilateral sources, and from foundations; loans from the private and public sectors; and public and private donations. The document also briefly presents ten case studies in the East Asia Region.

6. Bann, C. Blomley, T, Brinkate, T, Christensen, L, Grieg-Gran, M, Søren, H, Jensen, A, Rae, K and C Tenzin. 2003. Case Studies of Financing for SNRM. In: P. Gutman (ed), *From Goodwill to Payments for Environmental Services: A Survey of Financing Options for Sustainable Natural Resource Management in Developing Countries*. World Wide Fund: Macroeconomics for Sustainable Development Program Office.

Geographic Coverage: Developing countries: Bhutan, Bolivia, Brazil, Ecuador, Malawi, Namibia, South Africa, Tanzania, Uganda and Zimbabwe

Environmental Asset and Type of Service: Various

Other Information: *Buyers: Various; Sellers: Various*

Abstract / Summary:

The 12 case studies offer brief illustrations of many financing options and the contextual issues these raise. There are several ways to relate these case studies. Brazil, Bolivia, Ecuador, Namibia, Tanzania, and Zimbabwe may all be read as cases of financing through payments for PES schemes. Still there are many differences among them. Brazil's ICMS Ecológico and the Ecuador and Zimbabwe cases are government-led payments for environmental services schemes. The Bolivia and Zimbabwe cases are non-government organization-driven PES schemes. Namibia, and to a lesser extent, Zimbabwe can be considered examples of markets for environmental services. The South African out-grower programme is a case of financing through payments for environmental products. The two South African cases and the Namibian case are also examples of private businesses' partnership with communities and non-government organizations. The cases in Ecuador and Malawi are two small successes in the difficult transitions from external donors' financing to participants' self-financing. The Uganda Impenetrable Conservation Fund conveys the lessons of Africa's first conservation fund, and together with Bhutan shows the need and difficulties of multisource financing.

7. Bennagen, M E. 2005. Designing Payments for Watershed Protection Services Program: The REECS- PREM Experience. In: Padilla, J E , Tongson, E and R Lasco (eds), *PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation*, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp. 161-170.

Geographic Coverage: Philippines

Environmental Asset and Type of Service: Forests: watershed protection

Other Information: *Buyers: water users downstream Seller: Various*

Summary/ Abstract:

Payments for environmental services is a natural resource management approach that aims to address any of the following: (1) environmental integrity, (2) poverty, and (3) financial sustainability. This study explores the potential of implementing payment for environmental services in two northern Luzon sites, namely: (1) the Peñablanca Protected Landscape in Cagayan, and (2) the Kalahan Forest Reserve in Nueva Vizcaya. Results reveal some strengths and weaknesses in the three above-mentioned aspects in the two sites. The results of the study are most useful to local governments, water districts, non-governmental organizations and others that may wish to explore this mechanism as a strategy to improve watershed management in their localities.

8. Bautista, G. 2005. *Lessons in the Development of Markets for Ecosystem Services in Watershed Context. A Survey of Different Country Experiences.* Philippines: REECS, Inc.

Geographic Coverage:	Global
Environmental Asset and Type of Service:	Forests: watershed protection
Other Information:	<i>Buyers:</i> water users <i>Sellers:</i> Various
Summary/ Abstract:	

This paper provides a review of experiences of various countries in the development of market-like assessments in the delivery of water-related forest ecosystem services. It identifies the various ecosystem services, watershed projects and activities that interested parties have either directly contracted with potential suppliers or have promoted through various financial mechanisms. Moreover, it highlights the role of national and local governments, private industries, individual landholders, associations of resource users, local and international non-government organizations, and local communities in the establishment of a new watershed institution. Finally, this paper draws some lessons from these wide-ranging water-related experiences and points out several critical conditions in the development of ecosystem services. These include: the willingness to pay of service users, the incentive and payment schemes for the delivery of such services, and the activities and transaction costs in mediating between potential suppliers and consumers of such services and sustaining their arrangement.

9. Bishop, J. and N. Landell-Mills. 2002. *Forest Environmental Services: An Overview.* In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development.* Earthscan Publications Ltd. London. pp 15 – 36.

Geographic Coverage:	Global
Environmental Asset and Type of Service:	Forests: various
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various; <i>Brokers:</i> Various
Abstract/Summary:	

This paper, which is the second chapter of the book, provides further discussion of forest environmental services, namely carbon sequestration, watershed protection and biodiversity conservation. The links between forests and watershed services are described focusing on the myths and truths about such links emphasizing the need for careful measurement of hydrological functions before the introduction of watershed protection measures, market-based or otherwise. The paper argues that the difficulty in measuring biodiversity has critical implications in the development of markets and incentive systems. Moreover, it appears that markets for biodiversity conservation appear to be in rich countries while deforestation occurs mostly in developing countries. The role of forests in carbon sequestration, however, is much easier to measure and markets have now emerged for this service. In a scenario of unsustainable timber harvesting, some studies show that carbon storage could account for up to 70 per cent of economic benefits measured.

10. Boquiren, R. 2004. *Rewards to Environmental Services in the Philippine Uplands: Constraints and Opportunities for Institutional Reform. (Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provide)*. World Agroforestry Centre (ICRAF), Indonesia.

Geographic Coverage:	Philippines
Environmental Asset and Type of Service:	Forests: watershed protection, biodiversity conservation, landscape beauty and carbon sequestration
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various
Summary/ Abstract:	

This study reviews the policy context and institutional arrangements guiding the payment of rewards and incentives for environmental services in the Philippines. It covers three general legislations, which provide the overall policy framework on natural resources use, access and control, 13 that define institutional arrangements within the environment sector, and a minimum of 15 specific issuances, either officially adopted or still in draft form, which deal with on-the-ground implementation or enforcement.

The study reveals that the policy framework of the country with regard to environmental services is strong yet unrestrained, receptive though largely still reactive, and extensive despite considerable gaps and a number of institutional constraints. Moreover, it shows the responsiveness of the state and environmental services players to the changing demands on natural resource management regimes. Thus, policies are evolving from the purely administrative and technical, to those that are responsive to the competing imperatives of production and sustainable development conservation and human welfare, centralized governance and multistakeholder participation, short-term and inter-generational goals, and sensitivity to global imperatives and local realities.

The study also identifies institutional players in environmental services. These include the Philippine state as the primary stakeholder, local economic interest groups, external economic interest groups, internal state mediators, external state mediators, civil society mediators, and the donor community. The identified policy gaps at the implementation level and institutional constraints can be addressed by an agenda that promotes (a) policy enhancement and re-appreciation to recognize the requisites of commons management and benefit-sharing, not an all-out reformulation process; (b) capacity and capability building in environmental service negotiation, valuation, and protection; and (c) research and advocacy on environmental services management and benefit sharing.

11. Boquiren, R. 2005. *Legal, Policy and Institutional Framework for Payments for Environmental Services (PES) in the Philippines: Opportunities and Challenges in the Forestry Sector*. In: Padilla, J E, Tongson, E and R Lasco (eds), *PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation*, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp. 88-102.

Geographic Coverage:	Philippines
Environmental Asset and Type of Service:	Forests: watershed protection, biodiversity conservation and ecotourism
Other Information:	<i>Buyers:</i> water users downstream <i>Sellers:</i> independent small-scale gatherers and producers/upland dwellers, water utility

companies, independent power producers, individual traders and entrepreneurs; *Brokers*: Local and National Governments, NGOs, donor community

Summary/ Abstract:

This paper looks into the policy context and institutional arrangements guiding the payment of rewards and incentives for environmental services in the Philippines. It reviews the country’s major legislations, policy issuances, and field case experiences identified a healthy community of stakeholders in the environmental service sector. The review reveals that there are sufficient laws to guide the provision of environmental services, their harnessing, the protection of source areas, and the extension of benefits to communities in the source areas. This provides many opportunities for engaging local government units, civil society sectors and the private sector in market creation and enhancement. Relevant institutional constraints and policy gaps at the implementation level include equity and social welfare issues as translated in benefit-sharing and payment of rewards. These can be addressed through a multistakeholder, interagency environmental services agenda that promote (a) policy enhancement and re-appreciation to recognize the requisites of commons management and benefit-sharing, not an all-out reformulation process; (b) capacity and capability building in environmental services negotiation, valuation, and protection among local government units and civil society groups, and (c) research and advocacy on environmental services management and benefit-sharing.

12. Brand, D. 2001. Mechanisms to Encourage Private Capital Investments in the Environmental Services of Forests. *International Workshop of Experts on Financing Sustainable Management of Forests*. Norway: Hancock Natural Resources Group.

Geographic Coverage:	Australia
Environmental Asset and Type of Service:	Forests: mainly carbon sequestration and dry land salinity
Other Information:	<i>Buyers</i> : Various; <i>Sellers</i> : Various

Abstract:

That forests provide a wide range of economic, social and environmental values locally, nationally and globally is well accepted. Research, however, shows that these environmental services are unrecognized by the market. If these services were properly priced, their value could contribute substantially to achieve sustainable forest management. The Kyoto Protocol’s recognition of the forests’ limited role to address climate change has provided a foundation for innovation and commercial development of a market for an environmental service from forests. Conceptual initiatives are now expanding to cover potential markets for the recovery of land degradation and the conservation of biodiversity. The challenges in establishing new “environmental funds” in these areas are the same as traditional forestry management, which calls for projects and investments to have a sound legal and regulatory base, commercial returns, effective investment structures, and strategies to address risk and uncertainty.

- 13. Brand, D. 2002. Investing in the Environmental Services of Australian Forests. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. pp 235 – 245.**

Geographic Coverage: Australia

Environmental Asset and Type of Service: Forests: carbon sequestration

Other Information: *Buyers:* Private sector corporations; *Sellers:* Not specified;
Broker: Hancock Natural Resources Group

Abstract/Summary:

This paper discusses the work being undertaken by the Hancock Natural Resources Group's New Forest Program to develop new instruments for abating climate change. This targets the business sector, particularly corporations in the energy, minerals, transport, construction and manufacturing sectors that need strategic investments (e.g. reforestation projects) in managing their green house gas emissions. This paper discusses a programme that is yet to be implemented, hence no discussion of the experiences and lessons learned.

- 14. Bui Dung, Dang Thanh Ha and Nguyen Quoc Chinh. 2004. *Rewarding Upland Farmers for Environmental Services: Experience, Constraints and Potentials in Vietnam. (Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provide)*. World Agroforestry Centre (ICRAF), Indonesia.**

Geographic Coverage: Vietnam

Environmental Asset and Type of Service: Forests: carbon sequestration, watershed protection and biodiversity conservation

Other Information: *Buyers:* Various; *Sellers:* Upland Farmers

Abstract:

This paper provides a brief review of theoretical literature on environmental rewards — basis for the rewards, type of reward, rewarding mechanism, issues associated with environmental rewarding. It also discusses the natural socioeconomic and demographic situation of Vietnam uplands, in general, and the North Vietnam's uplands, in particular. Issues and challenges in environmental and natural resource management in the uplands are discussed. This paper also analyses RUPES-related experiences of selected International Fund for Agricultural Development and SIDA-funded rural development projects in Vietnam and attempts to synthesize major constraints and potentials for RUPES to provide recommendations for follow-up RUPES activities in the country.

- 15. Bull, G, Harkin, Z and A Wong. 2002. Developing a Market for Forest Carbon in British Columbia. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. pp 201 – 221.**

Geographic Coverage: Canada

Environmental Asset and Type of Service: Forests: carbon sequestration

Other Information: *Buyers:* Potential buyers include energy companies in the province of BC; *Sellers:* Potential sellers – limited considering

eligibility criteria and low price of carbon; *Brokers*: No transaction to date; *Amount Paid and Payment Arrangements*: No transaction to date

Abstract/Summary:

The paper examines the progress made in developing markets for carbon in British Columbia, Canada. The province with its vast forest areas and sophisticated forest industry is well-positioned to take advantage of the opportunities provided by the Kyoto Protocol by creating potential supplementary income in addition to traditional forest revenues. However, carbon markets do not just happen and creating new markets requires substantial efforts on technical, legal and commercial fronts. Progress has been limited largely by uncertainty over the role of forest carbon sinks in recent climate change negotiations, putting buyers and sellers into a Catch 22 situation: buyers have been cautious about investment in forest-based emission offsets, resulting in a lack of funding to implement forest carbon projects, and therefore a lack of supply. The most exciting part of forest carbon market development is that an environmental service provided by forests — carbon sequestration — will become an integral part of forest planning.

16. Chandler, F J C. 2004. Making Markets for Forest Communities: Linking Communities, Markets and Conservation in the Asia-Pacific Region-The RUPES Project. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea, pp. 25-34.

Geographic Coverage:	Philippines, Nepal, Indonesia
Environmental Asset and Type of Service:	Forests: various
Other Information:	<i>Buyers</i> : Various; <i>Sellers</i> : Forest communities

Abstract:

Current successes in environmental transfer payments have only benefited large landowners and concessionaires. In addition, some types of transfer payment mechanisms are designed and implemented to the disadvantage of the upland poor. Rewarding Upland Poor for Environmental Services project is designed to address these issues. It aims to develop appropriate methods for rewarding the poor upland communities for the environmental services that they provide and builds working models of best practices for successful environmental transfer agreements adapted to the Asian context.

This paper provides the rationale for the RUPES project and how it has and will contribute to linking upland communities, markets and conservation of ecosystem services in the Asian region. Two sites are now officially conducting RUPES activities, the Ikalahan Ancestral Domain in the Philippines and the Kulekhani watershed in Nepal. Nine additional sites are just completing their project proposals. These sites are in Indonesia (6) and the Philippines (3), and cover the testing of rewards and reward mechanisms for biodiversity conservation (2 sites) and watershed protection (7 sites).

17. Changtragoon, S. 2004. Opportunities in Using the Conservation of Biodiversity to Alleviate Poverty in Thailand. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea

Geographic Coverage:	Thailand
Environmental Asset and Type of Service:	Forests: biodiversity conservation and carbon sequestration
Other Information:	<i>Buyer (potential)</i> : Various; <i>Seller (potential)</i> : Local people and private companies

Summary:

The Government of Thailand aims to improve the standard of living of disadvantaged rural people by decreasing their expenditure, increasing their income and enhancing their economic opportunities. This paper discusses the prospects for poverty alleviation based on biodiversity conservation through ecotourism management, food banks from forest community establishment and forest plantations for medicinal and natural product investments, clean development mechanism and carbon credits.

The Government of Thailand has already ratified the Framework Convention on Climate Change and the Kyoto Protocol in 1994 and 2002, respectively. According to the Thai Cabinet resolution, every governmental department involved with CDM activities has been assigned to initiate projects and activities related to CDM either through reduction in consumption to decrease air pollution and gas release or through sequestration of carbon by increasing and sustaining green areas by reforestation and afforestation. The Royal Forest Department and the National Park, Wildlife and Plant Conservation Department of Thailand have continually implemented reforestation and afforestation to enrich the green area and encouraged the private sector and local people to invest in forest plantations for wood and fiber production prior to the establishment of CDM of the Kyoto Protocol. Getting the local people and private companies to invest in forest plantations to benefit from the CDM projects may take some time due to their lack and/or unclear understanding of CDM contribution and CDM regulations and management from the Kyoto Protocol. In 2003, the Government of Thailand planned to initiate the incentive project on setting up sustainable green zones in towns and communities as botanical and community gardens by reducing land property tax for the local people who used their own lands for this purpose.

18. Chen Gengchang. 2002. Development of China's Ecological Compensation Scheme as discussed in CCICED Western China Forest Grasslands Task Force. *Workshop on Payment Schemes for Environmental Services: Summary of Proceedings*.

Geographic Coverage:	Mainland China
Environmental Asset and Type of Service:	Forests: all services from forest lands
Other Information:	<i>Buyers</i> : Various; <i>Sellers</i> : Government (state, provincial, municipal, county)

Abstract / Summary

The inspiration for China's Ecological Compensation Scheme comes from the tourist site of Qingcheng Mountain of Chengdu Municipality in Sichuan. Poor forest management in the 1970s resulted in crisis for this scenic spot; and the local government decided that 30 per cent of income from entrance tickets would be used for forest protection. Adoption of the scheme was initially turned down because downstream users argued that they alone should not have to pay. The scheme however was pushed through with the adoption of the Forest Law in 1998 incorporating a clause that called for its establishment.

In 2001, the Ministry of Finance allocated 1.0 billion yuan to be used in ten provinces for pilot implementation. Aside from this, there are three other channels of fiscal investments for China’s forestry: (1) afforestation payments and tending and protection payments associated with the Natural Forest Protection Program being implemented in 22 provinces and municipalities; (2) grain, seedling, and cash subsidies provided to farmers as a part of the Cropland Conversion Program, being implemented in 24 provinces and municipalities; and (3) payments for afforestation and seedlings associated with the Sand Control Program being implemented in five provinces.

19. Chomitz, K, Brenes, E and L Constantino. 1998. *Financing Environmental Services: The Costa Rican Experience and Its Implications*. The World Bank: America Management Unit, Latin America and the Caribbean Region.

Geographic Coverage:	Costa Rica
Environmental Asset and Type of Service:	Forest: watershed protection, carbon sequestration and landscape beauty
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various

Abstract / Summary:

Costa Rica’s new approach to forestry delinks the provision of environmental services from the financing of these services. The government acts as an intermediary in the sale of services. It sells forest services, such as carbon sequestration and watershed protection to domestic and international buyers. Funds from these sales — and from a fuel tax — are used to finance the services. Some services are provided directly by the government, from national parks and other public lands. However, the most innovative part of the system is the provision of services by private landholders under contract.

20. Commercial Photography in Queensland as discussed in ANZECC (Australian and New Zealand Environment and Conservation Council. *Benchmarking and Best Practice Program: User Pays Revenue*. A Paper Presented at TNC Workshop on Sustainable Financing for Marine National Parks Based on Tourism Revenues. Bali, Indonesia, 26-30 November 2001.

Geographic Coverage:	Queensland, Australia
Environmental Asset and Type of Service:	Terrestrial and marine protected areas: landscape/seascape beauty
Other Information:	<i>Buyers:</i> Commercial photographers; <i>Seller:</i> Queensland Parks and Wildlife Service

Abstract/Summary:

Under the Nature Conservation Act of 1992, all commercial activities in protected areas, including photographic activities undertaken for gain, require a permit from the Queensland Parks and Wildlife Service unless the activity is conducted under a special agreement. Potential impacts of filming especially from large film crews can be managed. Also, revenues can be raised with a sliding scale so that small operators who are less likely to damage the environment or require staff supervision, pay low fees while large-scale productions make a more substantial contributions.

21. Compensation for Environmental Services from Mountain Forests in Costa Rica in Financing Protected Areas Task Force of the World Commission on Protected Areas (WCPA) of IUCN, in collaboration with the Economics Unit of IUCN (2000) Financing Protected Areas. IUCN. Gland, Switzerland and Cambridge, UK.

Geographic Coverage:	Costa Rica
Environmental Asset and Type of Service:	Forests: all ecological functions
Other Information:	<i>Buyers:</i> Hydroelectric corporations (Campania Energia Global and Campania Nacional de Fuerza y Luz); <i>Sellers:</i> Seller: upstream forest owners; <i>Brokers:</i> National Fund of Forest Planning, Foundation for the Development of the Central Volcanic Range

Abstract / Summary:

One of the most important innovations of Costa Rica's Forestry Law is the decision to create a system to compensate forest owners for the environmental services their forests provide to society. This system is basically supported by a tax on fossil fuel. Two hydroelectric corporations are presently paying forest owners for watershed services. Encouraged by this positive experience, the National Fund and the Government of Costa Rica have been negotiating the establishment of the world's first ecomarkets with the support of the World Bank.

22. Corcuera, E, Sepulveda, C and G Geisse. 2002. Conserving Land Privately: Spontaneous Markets for Land Conservation in Chile. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. pp 127 – 149.

Geographic Coverage:	Chile
Environmental Asset and Type of Service:	Forests: biodiversity conservation, preservation of landscape beauty for ecotourism
Other Information:	<i>Buyers:</i> Private sector — individuals; companies, including lumber companies; conservation communities, including scientists, NGOs; <i>Sellers:</i> Private landowners and government; <i>Brokers:</i> NGOs, in some instances, none

Abstract/Summary:

This article explores the spontaneous market phenomenon in Chile where free market forces have led to the establishment of privately protected areas. The roots, characteristics, benefits and shortcomings of privately protected areas are discussed.

As of the writing of this paper, about 450,000ha have been under privately protected area. The analysis shows that the spontaneous emergence of a land conservation market in Chile is a positive phenomenon that helps to achieve desirable social objectives at minimal public cost. However, when conservation is left to the free market, it tends to occur in limited areas of scenic beauty, under inappropriate management standards, without any legal assurance of long-term continuity, with minimal contributions to local sustainable businesses, and at great distance from urban cores and people who would most benefit from access to natural recreation. The paper recommends appropriate public policy, market and social incentives to promote and support private conservation initiatives, expand their coverage and improve management and effectiveness.

23. Cottle, P and C Crosthwaite-Eyre. 2002. Insuring Forest Sinks. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. pp 247 – 259.

Geographic Coverage:	Bolivia (for case study)
Environmental Asset and Type of Service:	Forests: carbon sequestration
Other Information:	<i>Buyer:</i> American Electric Power and PacifiCorp and BP Amoco; <i>Seller:</i> Government; <i>Broker:</i> Friends of Nature Foundation, The Nature Conservancy

Abstract/Summary:

This paper outlines some of the issues involved in managing and insuring risk in forest-based carbon projects, and illustrates these issues in the context of the Noel Kempff Mercado Climate Action Project in Bolivia. Risks cover political, institutional, trading and project risks. The project case study involves over four million acres of threatened tropical forests and implemented through a partnership between the government, one local and one international non-government organization and American power companies and a major international petroleum company.

Insurance is intended to guarantee that the project could achieve a minimum of carbon offsets to be commercially and politically viable in the long term. With right information and open dialogue, cost-effective insurance or other financial risk management solutions can be designed and implemented.

24. Cruz, L. 2005. Natural Products Research and Bioprospecting. In: Padilla, J E, Tongson, E and R Lasco (eds), *PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation, Manila, March 1-2 2005*, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp. 116-125.

Geographic Coverage:	Philippines
Environmental Asset and Type of Service:	Forests: biodiversity
Other Information:	<i>Buyers:</i> research institutes, pharmaceutical companies, etc.; <i>Sellers:</i> Kanawan Aytas; <i>Brokers:</i> UP-Marine Science Institute, UP- College of Medicine and Michigan State University

Abstract/Summary:

Bioprospecting and natural products research started with the discovery of drugs and other uses from natural products of plants and other bioresources. In recent years, high biodiversity in tropical forests has been attracting scientists to explore its riches for the development of new medicines. There is, however, a need to protect the rights of communities and researchers in developing countries for responsible conduct of bioprospecting. Thus, with biodiversity and conservation as important concerns, intellectual property rights on traditional knowledge and equitable sharing of benefits with the community are considered also as equally pressing issues. There are existing Philippine laws that regulate bioprospecting and natural products research in the country. The University of the Philippines-Marine Science Institute has a long experience in productive collaborative research on marine natural products, even prior to the enactment of such laws as the Wildlife Act and Indigenous Peoples' Rights Act. In collaboration with the University of the Philippines College of Medicine and the Michigan State University, the University of the Philippines Marine Science Institute is now involved in a biodiversity project on marine

and terrestrial bioresources, providing valuable insights into the current situation of undertaking bioprospecting activities in the country, particularly in dealing with the community and respecting traditional knowledge. The aim is to ensure that bioresources remain renewable and for bioprospecting to become sustainable.

25. Cuéllar, N, Herrador, D and M González. 1999. *Trade in Environmental Services and Sustainable Development in Central America: The Cases of Costa Rica and El Salvador*. Canada, International Institute for Sustainable Development.

Geographic Coverage: Costa Rica and El Salvador

Environmental Asset and Type of Services: Forests: carbon sequestration

Other Information: *Buyers: Various; Sellers: Various*

Abstract/Summary:

This document presents two cases illustrating the various conditions and advances made toward the creation of markets in environmental services. These are the: (1) Greenhouse Gas Emission Reduction Trading in Costa Rica and (2) Shade-Grown Coffee and Environmental Services in El Salvador. The case of Costa Rica provides an analysis of the opportunities of greenhouse gas emission reductions for the country that stem from the Kyoto Protocol. This case shows the importance of an institutional framework at the global, regional and local levels that facilitate and promote trade in environmental services. The existence of the necessary environmental institutional framework as well as the strategic impetus from wealth-generating sectors, such as ecotourism, has enabled Costa Rica to become a leader in the negotiation and execution of activities implemented jointly for the consolidation of its system of conservation areas.

The case of El Salvador deals with the environmental services produced by the country's "coffee forests." Coffee plantations have been established in key areas for the provision of environmental services in the absence of forest cover. However, it is clear that these areas are insufficient given the degree of the country's environmental degradation. Mechanisms arising from the global environmental negotiations on sustainable use and biodiversity and on climate change represent unparalleled opportunities to promote processes that will make coffee cultivation more economically viable and, at the same time, constitute important mechanisms for developing a domestic reforestation strategy.

26. Echavarria, M. 2002. *Financing Watershed Conservation: The FONAG Water Fund in Quito, Ecuador*. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. pp 91 – 101.

Geographic Coverage: Ecuador

Environmental Asset and Type of Service: Forests: watershed protection

Other Information: *Buyers: Water users — domestic households, companies, farmers, hydropower generators; Sellers: landowners*

Abstract/Summary:

In Quito, the capital of Ecuador, threats to water resources are spurring action. In early 2000 the city established a water fund (Fondo del Agua, FONAG) to finance the management and conservation of surrounding watersheds. Early experiences are encouraging. This paper describes FONAG, outlines its early experiences, and highlights emerging risks and opportunities.

27. Echavarria, M, Vogel, J, Alban, M and F Meneses. 2003. *The Impacts of Payment for Watershed Services in Ecuador: Emerging Lessons from Pimampiro and Cuenca*. International Institute for Environment and Development, London. 66 pp.

Geographic Coverage:	Ecuador, case study of a specific location
Environmental Asset and Type of Service:	Forests: watershed services (maintenance of water quantity and quality)
Other Information:	<i>Buyer:</i> Domestic water consumers – households and commercial establishments; <i>Seller:</i> Private landowners' association; <i>Broker:</i> NGO, an FAO-funded project, foreign donor, municipal government; <i>Amount Paid:</i> Up to US\$1.00/ha per month, depending on vegetal cover of the land, paid quarterly; <i>Payment Arrangements:</i> Level of payments is based on political negotiation rather than on technical analysis of hydrology, water valuation or financial planning. Fund is sourced from percentage of water tariff, an initial investment from a foreign donor and the FAO-funded project. Other sources include national and international sources. It is maintained in an account with the National Development Bank; <i>Year Payments Started:</i> 2001

Abstract/Summary:

The paper presents the national context and describes the laws, policies and institutional organization relating to water resource management. It also provides a summary of how watershed “services” are being discussed and developed nationally. The features of the Pimampiro payment systems and water resources management system of Cuenca municipal water company are also described. The focus of most payment mechanisms has been on drinking water and hydropower generation because their economic value is clearly recognized and there is greater willingness to pay for these uses. The contrary is found in water for agricultural use. Payment mechanisms are deemed limited in addressing equity issues and market mechanisms are not the solution to everything, and these cannot work in a vacuum. Markets for environmental services create incentives for particular stakeholders, but to solve environmental problems, these have to be complemented by other environmental policies.

28. Emerton, L and Y Tessema. 2001. *Economic Constraints to the Management of Marine Protected Areas: the Case of Kisite Marine National Park and Mpunguti Marine National Reserve, Kenya*. IUCN Eastern Africa Regional Office, Nairobi, Kenya.

Geographic Coverage:	Eastern Africa
Environmental Asset and Type of Service:	Marine Protected Areas: mainly marine ecotourism
Other Information:	<i>Buyers (potential):</i> Recreationists, private sector, international funding institutions; <i>Seller:</i> Kenya Wildlife Service (KWS) with technical assistance from IUCN

Abstract/Summary:

The Kisite Marine National Park and Mpunguti Marine National Reserve requires an average budget of US\$135,000 a year over the period 2000-2004. This is hardly attainable under existing financing mechanisms

of the park.. Four major economic tools have been deemed helpful in overcoming these financial constraints: (1) improvement in pricing as visitor fee is only set at US\$5 per adult visitor and (2) development of additional and innovative financing mechanisms. Additional contributions from tourists (through purchase maps, literature, postcards or other park souvenirs from Kenya Wildlife Service), private investors (through private charitable donations, as well as corporate sponsorship and advertising deals for particular park activities and facilities) and international financial institutions through debt-for-nature swaps, green funds, trust funds, voluntary contributions, donations and sponsorship; (3) reform in financial retention and administration systems; and (4) cost-sharing arrangements.

29. Erdmann, M. n.d. *Case Study: Implementing a User Fee System in Bunaken National Park*. Online.

Geographic Coverage: Indonesia

Environmental Asset and Type of Service: Coral reefs: seascape beauty and marine biodiversity

Other Information: *Buyers:* tourists, SCUBA divers *Seller:*

Abstract/Summary:

For almost ten years, Bunaken National Park charged no entrance fee because the tourism community rejected the entrance gate concept. Moreover, there was little incentive to institute such a system when revenues were unlikely to be reinvested in the area. In 2000, the North Sulawesi Watersports Association, comprising representative dive operators in the Bunaken area, realized the need for long-term financing of conservation programmes and instituted a US\$5 “voluntary” fee to support the patrol system. It also initiated discussions with the United States Agency for International Development Natural Resource Management programme on the need for a formal entrance fee system. In 2001, the fee system was pilot tested. It charges foreign guests Rp.75,000 (US\$7.50) per year and Indonesian guests Rp.2,500 (US\$0.25) per trip. Proceeds from the funds were allocated to (a) the patrol system, including fuel, monthly salaries, maintenance of engines and equipment; (b) the erection of village information boards at 30 sites in park; (c) daily operational expenses of the park; and (d) the implementation of a trash management system. One major lesson from this initiative is that support and participation of the tourism sector is essential to the successful implementation of an entrance-fee system.

30. Food and Agriculture Organization. 2004. *Payments for Environmental Services in Watersheds*. Rome, FAO.

Geographic Coverage: Latin America

Environmental Asset and Type of Service: Forests: watershed protection

Other Information: *Buyers:* Various; *Sellers:* Various

Summary:

A set of criteria was established to characterize and assess practical experiences from the execution of PES schemes in watersheds in Latin America. The criteria are categorized into five: (1) the *context* — the policy, legal and institutional frameworks, management plan and time frame of the payments for environmental services scheme; (2) *actors* — type of sources of financing; type of institutions collecting and managing the funds, types of institutions paying the services providers, socioeconomic status of provides and users, and number of providers, and intermediate and end users; (3) *valuation, financing and costs* — amount paid by users to

service providers, fee structure, sustainability of financing, cost of preliminary studies, operations, monitoring and evaluation, among others; (4) *operation and design of the scheme* — participation mechanism, operating conditions, activities, methods, and sources of risks, etc; and (5) *monitoring and follow-up* — mechanisms for performance, assessment and monitoring.

General lessons were also identified by the participants based on the several experiences presented during the forum. These include the following: (1) PES schemes in watersheds have been applied at very different stages and for various objectives in Latin America and usually managed by an non-government organization, to national programmes controlled by the State; (2) most schemes operate without a specific legal basis and only few countries have specific legal frameworks for PES at the national or regional level; (3) there are no inventories of cases of PES schemes and there are few studies on the socioeconomic and environmental impacts of these systems; (4) there are significant uncertainties regarding the cause-effect relationships between land use and the services; (5) service providers show interest in PES schemes as they may be an informal mechanism to establish property rights for land and natural resources; (6) the role played by the State in PES schemes for water-related services in Latin America has varied significantly; (7) public institutions involved in the schemes are local rather than national in scope; and (8) there is a potential to replicate PES experiences but they need to be adapted to the particular contexts.

31. Francisco, H. 2005. The WHAT, the HOW, and the WHERE of Environmental Service Payments. In: Padilla, J E, Tongson, E and R Lasco (eds), *Proceedings of the National Conference-Workshop for Payments of Environmental Services*. Philippines: WWF/ICRAF/REECS/CARE/UP.

Geographic Coverage:	Global
Environmental Asset and Type of Service:	Various
Other Information:	<i>Buyers:</i> various <i>Sellers:</i> various
Summary:	

Environmental service payments or rewards for environmental services are now increasingly recognized and supported in various parts of the world, particularly in areas where critical natural resources are under serious threats. This paper provides the basic conceptual principles and elements of environmental service payments. Moreover, it describes some experiences in the environmental service payment scheme in various parts of the world and in the Philippines mainly to illustrate how the concept/approach is “operationalized”. This paper also highlights the points on where to begin in setting environmental service payments in the country. These include the following: (1) the need for some legislative action through amendment either in existing laws or through the creation of a new law; (2) the need for government support in creating a government agency solely for supporting environmental service payment scheme with appropriate authorities and corresponding budget; (3) the need to have a clearer definition of use rights over public lands that will be subjected under environmental service payment scheme in case it does not exist yet; and (4) the need for institutional arrangements to address very concretely some issues that are critical in targeting parties to the ES payment scheme.

- 32. Francisco, H, Rivera, M, Perino, A, Florido, L, Castillo, E, Ebor, J and F Siapno. 2003. *Pricing of Philippine Grassland Resources*, p. 141-161. Economy and Environment: Selected Readings in the Philippines: Resources, Environment and Economics Center for Studies, Inc. and Economy and Environment Program for the Southeast Asia (EEPSEA), Philippines, 387p.**

Geographic Coverage:	Philippines
Environmental Asset and Type of Service::	Grasslands: pasturelands
Other Information:	<i>Buyers:</i> Public grasslands lessees/ ranchers; <i>Sellers:</i> Government (Department of Environment and Natural Resources)
Summary:	

The estimation study provided the basis for the modification of a Department of Environment and Natural Resources Administrative Order that governs the use of public grassland resources. The significant changes include: (a) increase in rental fee from PhP15- PhP20 to PhP200- PhP500 per hectare, staggered over five years; (b) use of effective grazing areas instead of total leased area in the fee computation; (c) adoption of an incentive system that will allow as much as 80 per cent deduction in rental payments; (d) adoption of improved pasture management and soil conservation measures; and (e) government's provision of technical assistance to ranchers on improved pasture management.

The study on valuation of grassland degradation and rehabilitation was carried out to assess if rehabilitation of grassland resources would be profitable on the part of the ranchers and get information on additional basis for rent adjustment. The study shows that for Pasture Classes A and B, the cost of rehabilitation would make it possible to avoid a larger cost of degradation; thus, it pays to invest in rehabilitation efforts. Class C grasslands; however, were so degraded that the cost of rehabilitation would no longer be profitable. The alternative uses for grasslands areas include: agro-forestry system, cultivation of agricultural crops and reforestation of fast growing trees. Analysis shows that the net returns from retaining the area as grasslands were lower compared to the net returns from other land use options.

- 33. Guoyon A. 2003. *Rewarding the Upland Poor for Environmental Services: A Review of Initiatives from Developed Countries (Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provide)*. World Agroforestry Centre (ICRAF), Indonesia.**

Geographic Coverage:	Global
Environmental Asset and Type of Service:	Forest: watershed protection, carbon sequestration, biodiversity conservation and landscape beauty
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various
Summary:	

Developed countries have already established a number of mechanisms to implement environmental transfers either within their own country or towards other countries, including developing ones. This review looks at a number these mechanisms with a common matrix of analysis and tries to draw lessons for the design of RUPES mechanisms in Asia. The mechanisms reviewed are those have been designed to provide rewards to farmers for environmental services, particularly upland farmers. Not all these schemes had poverty alleviation as their objective, but many did have a clear social orientation, and in all cases we tried to look at whether these schemes could be targeted to reach poor upland communities.

There are three main conclusions to this review: (1) all payments for environmental services mechanisms require a fair amount of institutional development, and requires funding for capacity building (2) market-based mechanisms seem to have a much larger potential in terms of funding available and that they can be effective RUPES whenever these are implemented by the private sector in cooperation with non-government organizations or other institutions enabling the involvement of all stakeholders; and (3) the mechanisms in most cases have little chance to be of use because their potential impact is contradicted by a number of perverse incentives running against the upland poor and against environmentally friendly practices.

34. Gutman, P. (Ed). 2003. *From Goodwill to Payments for Environmental Services: A Survey of Financing Options for Sustainable Natural Resource Management in Developing Countries*. World Wide Fund: Macroeconomics for Sustainable Development Program Office.

Geographic Coverage:	Developing countries
Environmental Asset and Type of Service:	Various
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various

Summary:

The first chapter discusses financing issues in a generic initiative, and the particularities of long-term financing for sustainable natural resource management. It presents and briefly discusses 52 financing options. Most of them are currently available in most countries. Some are still in a developmental stage; a few others are still hypothetical. Chapters 2 and 3 discuss in more detail experiences with markets for environmental services and private-sector community partnerships for sustainable natural resource management. Chapter 4 discusses recent trends and offers conclusions and recommendations. Chapter 5 presents 15 “description cards” that briefly describe each financial alternative; provide a qualitative score to their performance regarding several concerns; and offer suggestions on where to go next in order to pursue funding from these sources or simply learn more about them. Chapter 6 presents 12 case studies that describe financing arrangements for as many sustainable natural resource management projects in developing countries. Chapter 7 offers links to references and resources to help the practitioner look for sources of financing for sustainable natural resource management. Most of these are available online.

Sustainable natural resource management is sometimes dismissed as an extra cost with low returns, or a desirable goal but with a low priority compared to other rural poverty alleviation needs such as health, education, infrastructure, water and sanitation, etc. Some have given up on the integrated conservation and development projects concept of the 1970s, arguing that it costs too much and delivers few conservation results. However, where there are few natural resources and many rural people, much more than sustainable natural resource management will be needed to reduce rural poverty, although conserving the scarce natural resources available may still be a priority.

- 35. Hadi, Y S and M B Saleh. 2004. Strategy for the Implementation of CDM and Carbon Trade in Indonesia. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea, pp. 89- 98.**

Geographic Coverage: Indonesia

Environmental Asset and Type of Service: Forests: carbon sequestration

Other Information: *Buyer (recommended):* developed countries; *Seller recommended):* small communities and villages; *Broker/Facilitator (recommended):* Indonesian Ministry of Forestry

Abstract:

Indonesia's market share in the clean development mechanism scheme is very small compared with its potential carbon supply. Based on a satellite data taken in 2000, Indonesia has 44 million hectares of land that can be potentially rehabilitated. The Ministry of Forestry targets the rehabilitation of 18 million hectares of forest land in the next five years. Rehabilitation of forest land is a highly important activity; however, this is difficult to implement because of the continual economic crisis and the transition in the decentralization of governance. To strategically implement the clean development mechanism-carbon trade in Indonesia, clean development mechanism proposals must have the following characteristics: small acreage, medium contract duration, intensive marketing, direct payment, being a part of rural development, and availability of enabling incentives. Enabling incentives include competitive price of carbon, low information expense, low transaction expense, long-term payment guarantee and a simple mechanism.

- 36. Heimlich, R. 2002. The U.S. Experience with Land Retirement for Natural Resource Conservation as discussed in CCICED Western China Forest Grasslands Task Force. *Workshop on Payment Schemes for Environmental Services: Summary of Proceedings*. 33 pp.**

Geographic Coverage: United States

Environmental Asset and Type of Service: Forests: all services from forest lands

Other Information: *Buyers:* landowners/ farmers; *Sellers:* Government

Summary:

The Conservation Reserve Program currently has 13.6 million hectares enrolled. It is a large programme with over 560,000 contracts and over 370,000 farmers involved. The average amount paid annually by the government for rental of land to be retired in this programme is US\$1.5 billion, with an average rental cost of US\$116 per hectare. In terms of cover, 60 per cent of Conservation Reserve Program acreage is planted with grasses, 16 per cent with trees or woody vegetation for wildlife, and 5 per cent is wetland restoration.

Four major lessons learned have to do with (1) targeting, (2) choosing the appropriate rent, (3) setting the contract term, and (4) slippage. From the 1930s to 1960s, the programme did not address targeting. At present, land to be included in the programme is chosen based on an "Environmental Benefits Index," which gives points for various factors ranging from erosion and water quality to costs. Rental rates are also adjusted from a median based on compensating the farm operator for the lost opportunity of cropping the land. Long-term rental and even purchase may be the most efficient options for lands that are being rented over and over again. "Slippage" refers to the problem of a farmer retiring some land as a part of the programme but bringing new land into production

to compensate. The Conservation Reserve Program has special provisions to keep participants from bringing new land into production.

37. Hong, Y B and A Ng. 2000. *Challenges in Sustaining Protected Areas and National Parks: A Preliminary Review of Entry Fees and Economic Valuation in Malaysia*. WWF-Malaysia.

Geographic Coverage:	Malaysia (Palau Payar Marine Park for the case study)
Environmental Asset and Type of Service:	Marine protected areas and national parks: recreation
Other Information:	<i>Buyers:</i> Tourists; <i>Sellers:</i> National Advisory Council for Marine Parks and Marine Reserves
Abstract / Summary:	

This study mainly provides the results of the willingness to pay survey for recreational benefits at Palau Payar Marine Park. The study found that 91 per cent of the respondents were willing to pay entrance fee if the money collected would be channeled directly to enhance the park. The average willingness to pay of respondents was estimated at RM\$16 for the whole sample comprising 209 valid questionnaires. The average willingness to pay of local tourists was estimated at RM\$9.40 while RM\$19.40 for foreign tourists. During the time of the study, the National Advisory Council for Marine Parks and Marine Reserves charged RM\$5 for adults and RM\$2.50 for children and senior citizens. Given the results of the survey, charges can still be improved. The study further recommends to: (a) monitor and periodically review existing fee mechanisms, (b) periodically review the two-tiered fee between local and foreign tourists, and (c) channel back entry charges into management through conservation activities and enhancing visitor satisfaction.

38. Iangkura, A. 1998. *Environmental Valuation: An Entrance Fee System for National Parks in Thailand*. IDRC-EEPSEA.

Geographic Coverage:	Northern Thailand (Chiang Mai Province)
Environmental Asset and Type of Service:	National parks (forests and watershed): forest recreation
Other Information:	<i>Buyers:</i> Park visitors; <i>Seller:</i> Government of Thailand
Abstract / Summary:	

The study recommended that the entrance fee for Doi Inthanon be increased from 5 baht to 40 baht per person. Park revenues from the increase in entrance fee are expected to be around 40 million baht from 5 million baht. Entrance fee to Mae Sa Waterfall should also be increased from 5 baht to 20 baht per person while for Doi Suthep, entrance fee should remain zero given the difficulty of assessing the predominantly spiritual value of the site.

39. Isakson, R. 2002. *Payments for Environmental Services in the Catskills: A Socio-economic Analysis of the Agricultural Strategy in New York City's Watershed Management Plan*. Ford Foundation and Fundación PRISMA.

Geographic Coverage:	New York
Environmental Asset and Type of Service:	Forests: watershed protection
Other Information:	<i>Buyer:</i> New York Government; <i>Sellers:</i> farmers and land owners

Abstract:

This paper evaluates the agricultural components of the New York City's Watershed Management Plan. It discusses how New York City has met the water requirements and quality standards imposed by the United States Environmental Protection Agency. It also describes the current water delivery system of the City. It proceeds to enumerate the various components of the payments for environmental services package of which the centerpiece is the Watershed Agricultural Program. The program uses City funds to implement management practices that protect New York City's water supply. Participating farmers often receive technical and managerial assistance, new farming equipment, and infrastructure improvements to their agricultural operations. Other components of the payments for environmental services package include: (1) Conservation Reserve Enhancement Program that pays farmers to remove sensitive streamside lands from agricultural production; (2) Whole Farm Easement Program that rewards farmers for their long-term commitment to sustainable agriculture; (3) Natural Resources Viability Program that offers marketing assistance to farmers participating in the program; and (4) Catskill Family Farms Cooperative that provides capital equipment and organizational structure for produce farmers to achieve economies of scale and market power.

Furthermore, this paper assesses the socioeconomic impact of the payments for environmental services package on farmers in the Catskill and Delaware River watersheds. Farmers cite that participating in the program provides them a number of opportunities. These include the farm's structural improvements, increased economic viability, and opportunity to become a better steward of the land and to be held harmless from future land use regulations. Additionally, this paper has found that the Watershed Agricultural Program has improved the economic well-being of 45 per cent of participating farmers, but has had a neutral impact on another 50 per cent of watershed farms. The economic benefits have not been equally distributed, however, as the programme is inherently biased towards large-scale dairy farmers. Nonetheless, most farmers are satisfied with the programme.

In addition to exploring the socioeconomic impacts of the payments for environmental services package on the watersheds' agricultural community, this paper reviews some of the environmental critiques of the program. Finally, this paper attempts to abstract from the specifics of the New York City case study and offers general conclusions that can assist in the design of payments for environmental services strategies in other areas.

40. IUCN. 2000. *Financing Protected Areas Task Force of the World Commission on Protected Areas (WCPA) of IUCN, in collaboration with the Economics Unit of IUCN (2000) Financing Protected Areas*. IUCN. Gland, Switzerland and Cambridge, UK. viii+ 58pp.

Geographic Coverage:	Global
Environmental Asset and Type of Service:	Protected Areas — watershed protection, carbon sequestration, seascape and landscape beauty
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various

Abstract / Summary:

This paper provides guidelines for protected area managers to develop and implement strategies to finance protected areas. Three case studies are presented: (1) a national system for raising money for conservation in New Zealand, (2) contribution of ecotourism activities within the KwaZuluNatal Nature Conservation Service, and (3) compensation for environmental services from mountain forests in Costa Rica.

41. Jensen C. 2003. *Development Assistance to Upland Communities in the Philippines. (Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provide). World Agroforestry Centre (ICRAF), Indonesia.*

Geographic Coverage:	Philippines
Environmental Asset and Type of Service:	Forests — watershed management, biodiversity conservation, ecotourism
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Upland communities with facilitation from Project implementers
Summary:	

This paper reviews three cases where development assistance is provided to upland communities in the Philippines. It then draws out lessons and insights from these experiences and cites implications for the RUPES Project. These case studies include: (1) Sustainability of Community Forestry in the Philippines; (2) Community-based Resource Management Project; and, (3) Area Resource Management Programmes for the Uplands.

Results of the review reveal that although there were some successes, upland development assistance has been short vis-à-vis its targets on poverty reduction and natural resource degradation. Such can be attributed to the following: (1) sustainable forest management is a long and costly process, thus, implementation periods are not sufficient to achieve sustainable forest management and poverty reduction; (2) community-based forest management democratizes resource use rights, but politics still has the “distributive power”. Despite the presence of enabling broad legal framework empowering the community to develop, utilize, manage and conserve forest resources, decentralization of resource management and policy implementation are nevertheless deterred by unnecessary bureaucratic requirements; (3) ineffective policy implementation resulting from lack of understanding, inconsistent interpretations, constant policy changes due to change in administration, “patronage politics” and lack of political will contributes to deforestation; (4) ecological values of the forest are only implicit in the programmes; hence, there is a need to value resources. This will serve as an incentive to and make various stakeholders appreciate the need for resource protection and conservation recognized; however, this has not been an explicit programme/project activity; and (5) good environmental governance is key to effective forest management because it promotes transparency and accountability.

42. Johnson, N, White, A and D Perrot-Maitre. n.d. *Developing Markets for Water Services: Issues and Lessons from Innovators. Forest Trends, World Resources Institute and Katoomba Group.*

Geographic Coverage:	Global
Environmental Asset and Type of Service:	Forests: mainly watershed protection but also touches carbon sequestration and biodiversity conservation
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various

Abstract:

This paper examines innovative experiences from around the world on the emerging markets for hydrological services. It provides a summary of the biophysical relationships between forests, water, and people. Moreover, it culls common issues and lessons from those cases and other experiences and describes the basic types of financial incentive mechanisms for watershed management, including self organized deals, trading schemes and public payment schemes. This paper concludes that there is no overall blueprint mechanism that fits all situations. Innovative mechanisms will be site-specific, will require elements of different approaches, and will vary depending on the nature of the ecosystem services, the number and diversity of stakeholders, and the legal and regulatory framework in place.

- 43. Kant, P. 2004. Policy Support for Enhancing Economic Returns from Smallholder Tree Plantations Using Carbon Credits and Other Forest Values. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea, pp. 41-48.**

Geographic Coverage:	Global
Environmental Asset and Type of Service:	Forests: carbon sequestration, Watershed protection and biodiversity conservation
Other Information:	<i>Buyer (potential):</i> Various; <i>Seller (potential):</i> Tree-plantation owners (smallholder)

Abstract:

The capacity of smallholding tree plantations to help ease poverty will significantly be enhanced by expanding their product base to include in their fold environmental services that they provide. The market for environmental services provided by smallholders of tree plantations is emerging; thus, policy tools are needed to support it.

Policy interventions should aim at (a) creating explicit demands for these goods and services and remove bottlenecks in meeting these demands; (b) encouraging wood gasification for use as fuel to replace fossil fuel; (c) creating demand for carbon sequestration under the Kyoto Protocol by setting up appropriate infrastructure of measurement, verification and certification; (d) infrastructure of measurement, verification and certification; (e) facilitating direct clean development mechanism investments by large companies interested in earning carbon credits in the developed countries; (f) recognizing water conservation benefits through tree plantations and enabling measurement and payment of services rendered; (g) recognizing soil conservation, biodiversity conservation and ecotourism benefits to the society through tree planting, enabling measurement of their contributions and investing the amount owed for the services generated in creating infrastructure for the smallholders; (h) ensuring asset liquidity of smallholder plantations through appropriate fiscal and legal policies; and (i) extending risk coverage and sharing insurance premium for covering risks on account of fires and thefts.

- 44. Kallesoe, M and D De Alvis. *Review of Developments of Environmental Services Markets in Sri Lanka. (Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provide)*. World Agroforestry Centre (ICRAF), Indonesia.**

Geographic Coverage:	Sri Lanka
Environmental Asset and Type of Service:	Forests: biodiversity conservation, watershed management
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various

Abstract:

The market for environmental services in Sri Lanka is relatively developing with ecotourism, hydropower and green agriculture, including ecolabeling, having the greatest potential. To date, most projects and initiatives promoting sustainable resource management have been largely focused on securing the supply of environmental goods and services. Recent developments in the legal and institutional setup, however, have stressed the importance of increasing awareness and capacity with regard to demand for environmental services and the need to provide incentives facilitating their provision. Major government actions and initiatives have so far included promoting a participatory approach to resource management, allocating tenure and property rights to local communities and continuing to increase environmental awareness and building institutional capacity.

45. Keenan, R, Davey, S, Grieve, A, Moran, B and J Donaldson. 2004. Market Mechanisms and Assessment Methods for Environmental Services from Private Forests in Australia. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea, pp. 49-59.

Geographic Coverage:	Australia
Environmental Asset and Type of Service:	Forests: carbon sequestration, biodiversity conservation, salinity mitigation
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Forest producers and rural communities

Summary:

The role of forests and trees in mitigating land and water degradation and loss of biodiversity and other environmental services has been recognized by the Australian Government for some time. It has implemented a variety of incentive arrangements to encourage private landowners to retain existing forest, replace forests on areas cleared for agriculture, and effectively integrate trees with current farming systems.

Environmental services, such as clean water, dry land salinity mitigation, soil protection, carbon sequestration or biodiversity conservation, are not effectively valued or traded as market goods. If forest owners can be tapped to supply these environmental services, it can significantly result in improved environmental outcomes and sustainable mix of land uses. Australian organizations have been facilitating the development of institutional arrangements for trading carbon credits from forests and a variety of approaches are being developed for marketing other forest services and benefits.

Trading Arrangements Cited

(1) Carbon Sequestration

- New South Wales State Forests has developed and implemented several institutional and legal mechanisms for efficient trade in carbon credits with Pacific Power, Delta Electricity and Tokyo Electric Power Company.
- North Forest Products in Tasmania, the Western Australia Department of Conservation and Land Management, and Greenfield Resources Options and the Queensland Government have entered into arrangement for plantation carbon rights with petroleum producers or energy generators.

- The Victorian Government has undertaken “Replanting Victoria” programme that provides a subsidy of A\$600 per hectare to small-scale plantation growers in return for the rights to carbon sequestered in the plantations.
- The Sydney Futures Exchange in 1999 developed a new carbon sequestration product in new forests established since 1990. However, the SFE decided not to proceed with the development of this product for commercial reasons and the current policy environment in Australia regarding ratification of the Kyoto Protocol is uncertain.

(2) Biodiversity

- A private forest reserve programme established under the Tasmanian Regional Forest Agreement has a target of 100,000ha of private forests reserved through the programme. The programme is spending \$A30 million to place voluntary covenants or management agreements over properties containing priority forest types required for protection. An alternative approach is being adopted in the State of Victoria. Landholders are invited to put forward tenders for the provision of alternative management approaches that will provide improved biodiversity conservation, (e.g. fencing and habitat protection rehabilitation activities, in native vegetation at a given price). Potential benefits are assessed using the “biodiversity benefits index.”

(3) Salinity

- New South Wales State Forests and Macquarie River Food and Fibre have launched a pilot programme to test salinity control credits to mitigate dry land salinity in the Macquarie catchment of the Murray-Darling Basin. The opportunity costs in lost production as well as the capital costs associated with this revegetation are prohibitive and act as a major disincentive in the adoption of the desired land-use change. In an attempt to overcome these disincentives, State Forests has entered into an agreement with various landholders to plant and manage native forest on their land. The landholders are paid an annual annuity, which is characterized as a “salinity control credit” based on the transpiration level of the planted forest. The rights to these “credits” are sold to Macquarie River Food and Fibre whose members will be adversely affected by the increasing salt load within the catchment. In this scheme, State Forests has the right to harvest the timber.

Other projects are underway to develop and pilot public/private co-investment models.

- 46. Kerr, J. 2002. Sharing the Benefits of Watershed Management in Sukhomajri, India. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. pp 63 – 75.**

Geographic Coverage: India

Environmental Asset and Type of Service: Forests: watershed protection

Other Information: *Buyer:* Central Soil and Water Conservation Research and Training Institute (CSWCRTI) *Sellers:* Villagers through the Hill Resource Management Society

Abstract/Summary:

The paper draws an extensive literature on Sukhomajri. It focuses on the institutional mechanisms by which the village’s inhabitants shared the costs and benefits of environmental restoration to ensure that everyone gained from the process. It also describes the setting and the technical and institutional initiatives, summarizes the economic benefits and their distribution, and discusses the lessons drawn from efforts to replicate the approach

in other locations. The Sukhomajri case involved two upstream-downstream environmental relationships with two separate institutional arrangements: a relationship with a large downstream city and a relationship between upstream and downstream users within the village. In both cases, a market mechanism was utilized to secure soil conservation to prevent siltation of downstream water bodies.

47. Koch-Weser, M.B. 2002. *Legal, Economic and Compensation Mechanisms in Support of Sustainable Mountain Development*. A Thematic Paper Presented to Bishkek Global Mountain Summit. 30 August 2002.

Geographic Coverage:	Australia, Colombia, Costa Rica, Ecuador, France, Philippines, USA
Environmental Asset and Type of Service:	Mainly forests: watershed protection, soil erosion prevention, recreation, carbon sequestration
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various

Abstract / Summary:

Environmental service agreements are urgently needed in the face of observable, global trends towards environmental degradation in mountain areas. Region-specific approaches need to be developed for the valuation and contracting of upstream environmental services by downstream communities and enterprises that depend on reliable quantities of water of good quality, and on disaster prevention.

This paper recommends the development of region-specific mechanisms and agreements. As a point of departure for the eventual development of specific instruments and regional agreements, it provides an overview of prominent current examples and cases on which the development of tools for the valuation, negotiation, implementation and monitoring of environmental services could build. The paper also provides operationally oriented guidance for the planning of systems and agreements for downstream-upstream payments for environmental services.

Case 1 Australia: Irrigators Finance Upstream Reforestation Case Study

Geographic Coverage:	South Wales Australia
Environmental Asset and Service:	Forest: watershed protection; transpiration and salinity reduction
Other Information:	<i>Buyer:</i> Macquarie River Food and Fibre, an association of 600 irrigation farmers in the Macquarie River catchment area; <i>Seller:</i> Government Agency State Forests of New South Wales

Abstract / Summary:

In 1999, SF entered into a Pilot Salinity Control Trade Agreement with Macquarie River Food and Fibre, which stipulates that the association pay the agency to replant trees in the upper catchment area. This public-private partnership works as follows: The irrigators pay ca. US\$42 per hectare of reforested land per year for 10 years to the state forests, purchasing transpiration or salinity reduction credits earned before by the agency through reforestation of 100ha of land. The Government Agency State Forests uses the revenues from this trading scheme to replant more trees on public and private lands. Private landowners receive an annuity, but the forestry rights remain with the Government Agency State Forests. The ambitious aim is to restore 40 per cent of the cleared forest, which is necessary to reverse the salinity process. So far, there have been few problems with

implementation because it was mainly meant to try the use of a market-based approach to help control dry-land salinity.

Case 2 Colombia: Irrigators Pay Upstream Landowners for Improvement of Stream Flow Case Study

Geographic Coverage: Colombia

Environmental Asset and Service: Forest: watershed protection

Other Information: *Buyers:* water user associations in the different subwatersheds; *Sellers:* Cauca Valley Corporation, the regional environmental authority that has been responsible for water allocation and the protection of the resources within the area since 1959

Abstract / Summary:

In the late 1980s and early 1990s, farmers made voluntary payments to the Cauca Valley Corporation, which placed contracts with upstream forest landowners dealing with reforestation, erosion control, and spring and stream protection according to subwatershed management plans. The association members voluntarily paid an additional water-use fee of US\$1.5-2/litre on top of an already existing water-access fee of US\$0.5/litre. Between 1995 and 2000, with the year 2000 considered a low point because of economic crisis in Colombia, a total investment of over US\$1.5 billion represented a rough, conservative estimate. Unfortunately, information concerning the amounts of the funds since the associations were formed has not been systematically collected. To date, there have been no problems regarding the implementation of the scheme; communities were highly motivated to take part in watershed protection measures.

Case 3 Costa Rica: Hydroelectric Companies pay Upstream Landowners via FONAFIFO Case Study

Geographic Coverage: Costa Rica

Environmental Asset and Service: Forest: mitigation of greenhouse gas emissions and the protection of watersheds, biodiversity, and scenic beauty

Other Information: *Buyers:* Public or private hydroelectric companies; Energía Global de Costa Rica, Hidroeléctrica Platanar and the Compañía de Fuerza y Luz; *Sellers:* Upstream forest owners; *Brokers:* Broker: National Forest Office and National Fund for Forest Financing (FONAFIFO) and NGO FUNDECOR

Abstract / Summary:

The PES programme was intended to maintain forest cover through the provision of compensation to forest owners for the benefits they produce. The Government of Costa Rica established the National Forest Office and National Fund for Forest Financing (FONAFIFO) within the Ministry of the Environment. It is primarily financed through a 5 per cent sales tax on fossil fuel. FONAFIFO pays forest owners for 5 years for the mitigation of greenhouse gas emissions and the protection of watersheds, biodiversity, and scenic beauty. Landowners who protect their forests receive US\$45/ha/yr; those who sustainably manage their forests receive US\$70/ha/yr; and those who reforest their land receive US\$116/ha/yr. In the second and third cases, plans have to be generated by professional foresters. While most deals are made between FONAFIFO and upstream forest owners, private companies, especially in the hydroelectricity sector, have also initiated contracts and have become partners in PES schemes.

Energía Global de Costa Rica operates two hydroelectric dams. This private company pays 40 upstream landowners for reforesting their land, adopting sustainable forestry techniques for US\$48/ha/yr, which is just equal to the average annual potential revenues from cattle ranching. Energía Global and FONAFIFO pays US\$18/ha/yr and US\$30/ha/yr, respectively. FUNDECOR controls the implementation of the conservation activities and manages the legal and administrative operation. Hidroeléctrica Platanar pays US\$30/ha/yr to FONAFIFO, which also adds a certain amount and pays upstream forest owners for the voluntary inscription of their properties in a forest regime. National Power and Light Company (Compania de Fuerza y Luz) also pays US\$45/ha/yr to FONAFIFO for forest management and conservation projects.

Case 4 Ecuador: Watershed Conservation Fund for Quito

Geographic Coverage:	Ecuador
Environmental Asset and Service:	Forest: watershed protection
Other Information:	<i>Buyers:</i> Hydroelectric companies and the water users of Quito; <i>Sellers:</i> Upstream forest owners; <i>Brokers:</i> Municipality of Quito and private and state conservation organisations

Abstract / Summary:

In 1999, the city and conservation organizations created a Fund that was meant to collect water consumption fees from water users to support environment-friendly land-use practices and reforestation in the ecological reserves upstream. The programme was aimed at maintaining stream flow and water quality and protecting biodiversity by a change in land-use practices. The Fund is now managed by an asset management company; decisions are made by the Board of Directors, composed of representatives of the Fund’s initiators as well as private and public users of the watershed. Fees were calculated based on the costs of patrolling the reserve. Only 1 per cent of the revenues from hydropower generation and water-use fees goes into the Fund. The plan is to expand the programme to the rest of the Condor Biosphere reserve and to determine the actual costs of water protection.

Case 5 France: Perrier Vittel’s Payments for Water Quality

Geographic Coverage:	France
Environmental Asset and Type of Service:	Forest: watershed protection
Other Information:	<i>Buyer:</i> Perrier Vittel, the world’s largest bottler of natural mineral water; <i>Sellers:</i> Dairy farmers

Abstract / Summary:

In the early 1990s, Perrier Vittel negotiated contracts with dairy farmers to reduce use of pesticides and nutrient run-off. Contracts were almost purely private agreements. State institutions only paid a small percentage of total expenses. The French National Agronomic Institute covered 20 per cent of the research costs and the French Water Agencies paid 30 per cent of the expenses for building and monitoring the use of modern barns. No formal partnership between the private and public sector was established.

Perrier Vittel pays the farmers for less intensive pasture-based dairy farming and improved animal waste management. Vittel pays unusually high compensation for an unusually long time (18- to 30-year contracts), “compensating farmers for the risk and the reduced profitability associated with the transition to the new technology”. Each farm received ca. US\$230/ha/yr for 7 years. Vittel spent about US\$155,000 for agricultural investment per farm. Over the first 7 years, Vittel paid ca. US\$24.5 million for the programme. When Vittel purchased Perrier, the model was transferred to springs in southern France. Other French bottlers are now considering adopting the model.

Case 6 Philippines: Makiling Forest Reserve

Geographic Coverage:	Laguna, Philippines
Environmental Asset and Type of Service:	Forest: watershed protection, forest recreation
Other Information:	<i>Buyers:</i> Local resource users, electric power generators, local water districts; <i>Sellers:</i> Multi-sectoral MFR Watershed Management Council
Abstract / Summary:	

As part of an overall strategy, local water users agreed to pay an additional water usage fee of \$US0.014/m³ to help finance watershed protection activities. This level of fee was established after conducting a willingness-to-pay survey amongst farmers and private households in the area. In addition to the fee, electric power generators provided seedlings for upstream reforestation efforts. No upstream household is compensated for its service. Conservation activities are conducted by the Watershed Management Council and forest users are restricted by fees.

This ambitious programme has not been very successful. In particular, the implementation of the watershed protection fee has been delayed, due to a pending court case investigating if the university has the right to collect fees. Although the water districts are willing to cooperate in collecting the fee, low support from the university's (UP Los Baños) top management and insufficient time resources for the academic initiators of the project slowed the process down. However, some in-kind contributions of water users were recorded. In contrast to the water fee, the pricing of the recreation facilities has been implemented successfully. Over the last two years, UPLB has doubled the amount of fees collected.

Case 7 USA: New York City Pays Upstream Farmers for Protecting its Drinking Water

Geographic Coverage:	New York, USA
Environmental Asset and Type of Service:	Forest: watershed protection, forest recreation
Other Information:	<i>Buyer:</i> Farmers, forestry landowners, and timber companies; <i>Sellers:</i> New York City with the New York City Department of Environmental Protection; <i>Broker:</i> Watershed Agricultural Council
Abstract / Summary:	

The 1992 Watershed Agricultural Program, which is financed completely by New York city, is managed through the local Watershed Agricultural Council. The investment of US\$1-1.5 billion over 10 years has been financed by a 9 per cent tax increase on the city residents' water bills over a five-year period. The fund is used for research, the development of Whole Farm Plans, and the implementation of best management practices. Dairy farmers and foresters who adopted best management practices were compensated with \$US40 million. Foresters who improved their management practices (such as low-impact logging) received additional logging permits for new areas, and forest landowners owning 50 acres or more and agreeing to commit to a ten-year forest management plan are entitled to an 80 per cent reduction in local property tax. New York city also paid US\$472 million to improve and rehabilitate city-owned sewage treatment plants, water supply facilities, and dams.

Case 8 United States: Payments to Farmers for the Retirement of Sensitive Land

Geographic Coverage:	New York, USA
Environmental Asset and Type of Service:	Sensitive lands (both lowland and upland): soil erosion/run off prevention, protection of wildlife habitat and water quality, and the restoration of wetlands
Other Information:	<i>Buyers:</i> Farmers; <i>Seller:</i> US Department of Agriculture; <i>Brokers:</i> Watershed Agricultural Council
Abstract / Summary	

The voluntary Conservation Reserve Program was established nationwide in 1985 by the US Department of Agriculture. Under the program, farmers are paid to retire sensitive land from agricultural use for 10-15 years and to implement conservation practices. Originally, the programme was set up to control soil erosion, but it now includes the protection of wildlife habitat and water quality, and the restoration of wetlands. Although the programme mainly serves lowland farmers, there are a few provisions relevant to mountain areas. Cropland with a high erosion index and areas suitable for the planting of living snow fences are eligible for placement in the program.

On average, farmers receive US\$125/ha/yr, based on the relative soil productivity within each county and a three-year average of local dry-land cash rent. The program covers 50 per cent of farmers’ costs to establish approved conservation practices, provided that they commit themselves to the restoration of degraded wetlands and associated upland habitat for at least ten years. Total cost to the government is around US\$1.8 billion/yr.

48. Laird, S and K ten Kate. 2002. Linking Biodiversity Prospecting and Forest Conservation. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. pp 151 – 172.

Geographic Coverage:	Global
Environmental Asset and Type of Service:	Forests: biodiversity conservation for pharmaceutical applications
Other Information:	<i>Buyers:</i> Pharmaceutical companies; research institutions; <i>Sellers:</i> Governments <i>Broker:</i> Research/ academic organizations; <i>Amount Paid and Payment Arrangements:</i> Joint venture agreements and similar agreements; <i>Year Payments Started:</i> Mostly in the 1980s onwards
Abstract/Summary	

This paper looks at how biodiversity prospecting has or can contribute to forest conservation as well as how it can negatively impact on forest and species conservation. It discusses existing legal and institutional constraints towards achieving more benefits for conservation. It also makes recommendations on steps that might be taken to overcome some of these constraints. The focus throughout the paper is prospecting for pharmaceutical applications.

Biodiversity prospecting has the potential to generate significant monetary and non-monetary benefits for conservation. However, its primary contribution to high biodiversity countries has been and will remain in scientific and technological capacity building. These types of benefits are the backbone of biodiversity prospecting partnerships, which come about whether or not a product is commercialized.

49. Landell-Mills, N. 2002. *Marketing Forest Environmental Services: Who Benefits?* Gatekeeper Series No. 104. London: International Institute for Environment and Development.

Geographic Coverage:	Global
Environmental Asset Type of Service:	Forests: carbon sequestration, biodiversity conservation, watershed protection and landscape beauty
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various

Abstract:

This paper attempts to shed light on the following questions: What drives market development? How should markets be established? What costs are involved? Will markets improve welfare? Will some stakeholders benefit more than others? How does performance vary between market structures? What is the role for governments? How do environmental service markets affect poorer groups?

It also draws out cross-cutting lessons relating to market form, drivers, processes and impacts. The author calls for both optimism and caution, with special attention given to potential pitfalls as well as opportunities facing poorer groups.

Finally, this paper recommends to: (1) clarify and assign environmental service property rights; (2) strengthen capacity for market participation through training in marketing, negotiation, management, financial accounting, contract formulation, and conflict resolution; (3) provide market support centre to improve poor people's ability to participate in emerging markets; and, (4) access to finance to negotiate and conclude environmental service deals.

50. Landell-Mills, N and I Porras. 2002. *"Silver bullet or fools' gold? A Global Review of Markets for Forest Environmental Services and their Impact on the Poor"*. Instruments for Sustainable Private Sector Forestry Series. International Institute for Environment and Development, London.

Geographic Coverage:	Global
Environmental Asset:	Forests: carbon sequestration, biodiversity conservation, watershed protection and landscape beauty
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various

Abstract:

This paper develops a conceptual framework for guiding research and applies it in a global review of emerging markets for environmental services, such as carbon sequestration, biodiversity conservation, watershed protection and landscape beauty. A total of 287 cases reviewed (75 deals for carbon sequestration, 72 for biodiversity conservation, 61 for watershed protection, 51 for landscape beauty and 28 for sales of "bundled services.") from a range of developed and developing countries in the Americas, the Caribbean, Europe, Africa, Asia and the Pacific.

For each of the services, the paper takes into account six basic questions. One, *what form do markets take?* This considers seven key features to help describe market form: the commodities, the characteristics of participants, the level of competition, payment mechanisms, the geographical extent of trading, the level of maturity and the degree to which markets are embedded in broader institutional contexts. Two, *why do markets evolve?* This looks into what is driving changes in demand and supply. Three, *how do markets evolve?* This examines institutional

elements, such as shifting power relations and changing incentive structures and processes. Four, *what does market development mean for human welfare?* This explores whether markets for environmental services improve social welfare — economically, socially and environmentally. Five, *what do markets mean for poor people?* This delves into the impacts of markets for environmental services on the financial, human, social, physical, natural and political assets of poor people. Finally, *what are the key constraints to market development?* This draws out lessons on constraints to market development, which, in turn, need drawing out from answers to the above-mentioned questions.

51. Lasco, R, Pulhin, F B, Roshetko, J and M R Banaticla. 2004. *LULUCF Climate Change Mitigation Projects: A Primer*. World Agroforestry Centre. Southeast Asia Regional Research Programme.

Geographic Coverage: Philippines

Environmental Asset and Type of Service: Forests: carbon sequestration

Other Information: *Buyers:* Various; *Sellers:* Various

Summary/ Abstract:

This primer briefly describes global climate change and the role of tropical forests in climate change. It also identifies the different ways to mitigate climate change through land use, land-use change and forestry projects. Moreover, this primer describes how much carbon can be sequestered from trees and forests in the Philippines and how the country can take advantage of the potentials provided by the Kyoto Protocol. It also concisely explains how the country can ensure that the climate benefits of land-use change and forestry projects are genuine. It concludes by identifying the environmental and socioeconomic benefits of land-use change and forestry.

52. Lasco R and F Pulhin. 2004. Carbon Budgets of Tropical Forest Ecosystems in Southeast Asia: Implications for Climate Change. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea, pp. 61-76.

Geographic Coverage: Southeast Asia

Environmental Asset and Type of Service: Forests: carbon sequestration

Other Information: *Buyer (potential):* Annex1 and Non-Annex 1 countries; *Seller (potential):* Southeast Asian countries

Abstract:

Terrestrial ecosystems have an important role to play in the global carbon cycle. In Southeast Asia, tropical forests are continually changing because of harvesting and conversion to other land covers. Logging activities, deforestation and land-use change affect the carbon stocks of tropical forests in Southeast Asia. Deforestation causes the highest emissions with more than 90 per cent of the above-ground carbon stocks of a natural forest being lost. This is seconded by logging, which results in a loss of about 50 per cent of carbon stocks. These results imply that the clean development mechanism, contained in the Kyoto Protocol, offers an opportunity for Southeast Asian countries with wide areas of barren lands to generate resources for their reforestation and, subsequently, reabsorb carbon emitted due to deforestation. The clean development mechanism provides a way for developing countries to be more actively involved in the mitigation of greenhouse gases in the atmosphere.

- 53. Lasco, R, Pulhin, F and M R Banaticla. 2005. Opportunities and Challenges in Environmental Service Payments: Carbon Sequestration. In: Padilla, J E, Tongson, E and R Lasco (eds), PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp. 50-61.**

Geographic Coverage: Philippines

Environmental Asset and Type of Service: Forests: carbon sequestration

Other Information: *Buyers:* Various *Sellers:* Various; eligible participants include individuals, groups of individuals, private companies, and NGOs that belong to a country that is a Party (signed and ratified) to the Kyoto Protocol

Summary/ Abstract:

Tropical forests play an important role in climate regulation as sources and sinks of carbon. They can help mitigate climate change by conserving existing carbon stocks, expanding carbon in terrestrial systems, and by substitution of fossil fuels. The Kyoto Protocol, which sets greenhouse gas (GHG) emission limits for Annex 1 (developed) nations, provides for the Clean Development Mechanism (CDM). The CDM is one of the three flexibility mechanisms established to meet the goals of the Kyoto Protocol. In COP-6, the parties agreed to include LULUCF projects under the CDM but limited projects to afforestation and reforestation. The Philippines can take advantage of the emerging global market for carbon credits arising from sinks project.

- 54. Lecocq, F and K Capoor. 2005. *State and Trends of the Carbon Market 2005*. Washington DC, International Emissions Trading Association.**

Geographic Coverage: Global

Environmental Asset and Type of Service: Forests: carbon sequestration

Other Information: *Buyers:* Various; *Sellers:* Various

Summary/ Abstract:

This paper reviews the state and trends of the carbon market as of May 2005. The key findings include the following: (1) the regulatory framework of the carbon market has solidified considerably in the past 12 months, with the start of operations of European Union Emissions Trading Scheme and the entry into force of the Kyoto Protocol; (2) the market for project-based emission reductions is still growing steadily with 107 million metric tonnes of carbon dioxide equivalent have been exchanged through projects in 2004; (3) new buyers of emission reduction have emerged — private and public entities in Europe now represent 60 per cent of the volume of emissions reductions purchased through project-based transactions compared to 21 per cent for private and public entities in Japan and 4 per cent for private entities in Canada; (4) the supply of emission reductions has remained heavily concentrated in India, Brazil and Chile; (5) there are four active markets for greenhouse gases allowances as of May 2005: the European Union Emissions Trading Scheme, the United Kingdom Emissions Trading System, the New South Wales Trading System and the Chicago Climate Exchange; and, (6) the widening gap between prices of carbon in Joint Implementation or clean development mechanism and in the European Union Emissions Trading Scheme raises concerns from project sponsors and host countries.

The paper concludes by saying that the carbon market has gone a long way over the past 12 months. However, the carbon risk is increasingly perceived by governments and firms as a strategic issue that should be carefully monitored, analysed, and hedged against. Other critical issues include the ability of clean development mechanism and Joint Implementation to supply large volumes of emission reductions, and the amount of Assigned Amount Unites that Russia and Ukraine might put into the market.

55. Leimona, B. 2005. RUPES: A Step Forward. In: Padilla, J E, Tongson, E and R Lasco (eds), PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp. 74-87.

Geographic Coverage: Philippines, Indonesia and Nepal

Environmental Asset and Type of Service: Forests: various

Other Information: *Buyers:* various; *Sellers:* upland communities

Abstract:

The RUPES project has initiated action research in a number of sites in the Philippines, Indonesia and Nepal to test various mechanisms to reward the upland poor in Asia for the environmental services they provide. Four years after its inception, the project has been drawing numerous lessons on addressing possibilities for establishing payments for environmental services.

The project maintains that market-based mechanisms have the potentials to offer financial benefits compared to existing public aid budgets for environmental and poverty alleviation programmes. These schemes can be effective RUPES mechanisms whenever these are implemented by the private sector in cooperation with non-government organizations and other enabling institutions. However, there are constraints in formulating a “pure” payment for environmental services. These raise the question of whether or not market-based mechanisms will benefit the poor. Non-market based mechanisms are theoretically more appropriate in meeting social goals and poverty alleviation objectives.

56. Li Zhiyong. 2004. A Policy Review on Watershed Protection and Poverty Alleviation by the Grain for Green Programmeme in China. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea, pp. 133-138.

Geographic Coverage: Mainland China

Environmental Asset and Type of Service: Forests: carbon sequestration

Other Information: *Buyer:* Government; *Sellers:* Farmers

Abstract:

China’s remarkable economic growth made it possible for the government to embark on a Grain for Green Programme. The programme, a clean development mechanism activity of Chinese style, was launched on trial in 1999 and implemented in 2002 across the country. It covers 25 provinces/regions/cities over 1,600 counties, involving 15 million households and 60 million farmers. The government has adopted a range of innovative and operational policy measures with Chinese characteristics. These are: (1) grain-and-cash subsidy policy; (2) subsidy policy for seeds and seedlings and afforestation cost; (3) preferential taxation policy; (4) guarantee policy for forest tenure; and (5) ecological protection forest-biased policy.

Following the implementation of the Grain for Green Programme, farmers' tenure to tree crops established on converted farmland and barren hills must be guaranteed. Farmers are entitled by law to go through procedures for changes in land use and be provided with certificates of tenure to tree crops by the People's Government above county level. The contracting-out duration would extend to 50 years after farmers have established plantations on farmlands and barren hills.

57. Lindberg, K and E Halpenny. 2001. *Protected Area Visitor Fees: Country Review*. Paper presented at TNC Workshop on Sustainable Financing for Marine National Parks Based on Tourism Revenues. Bali, Indonesia, 26-30 November 2001.

Geographic Coverage:	Global
Environmental Asset and Type of Service:	Protected areas, mainly marine but there are some discussions on terrestrial protected areas: mainly marine recreation
Other Information:	<i>Buyers:</i> Park visitors; <i>Sellers:</i> Various

Abstract:

This paper describes general issues and "lessons" learned in the context of visitor fees. It also describes the fee systems and experiences of various countries.

58. Liu Yongchun. 2002. *Local Experience with the Ecological Compensation Scheme in Anhui Province as discussed in CCICED Western China Forest Grasslands Task Force. Workshop on Payment Schemes for Environmental Services: Summary of Proceedings*. 33 pp.

Geographic Coverage:	Anhui Province, Mainland China
Environmental Asset and Services:	Forests: all services
Other Information:	<i>Buyers:</i> Forest operators; <i>Sellers:</i> Government

Abstract / Summary:

Anhui first completed the designation and definition of forest types. In 2001, the entire province's forests were classified and delineated: commercial forest of 26.53 million mu (41.8% of forest-use land); public-benefits forest of 36.90 million mu (52.8% of forest-use land); and national-level public-benefits forest 20.85 million mu (56.5% of the total public-benefits forest area).

The scheme initially targeted 51.02 million mu of provincial-level public-benefits forest with provincial funding. The state called for the area of pilot implementation in Anhui in 2001 to be 12.00 million mu and the annual subsidy to be 60 million yuan. Seventy per cent of the funds provided went directly to county-level institutions and operators, with the other 30 per cent allocated on a project-basis. Two types of contracts were signed with the operators of forests. A dual supervision method was used, with reporting up to both the provincial forestry bureau and the provincial bureau of finance, to ensure that funds were appropriately distributed. Problems encountered included low compensation standards, management costs, and negative impacts on state-owned forest enterprises.

59. Maher, H. 2000. *A National System for Raising Money for Conservation in New Zealand in Financing Protected Areas Task Force of the World Commission on Protected Areas (WCPA) of IUCN, in collaboration with the Economics Unit of IUCN (2000) Financing Protected Areas. IUCN. Gland, Switzerland and Cambridge, UK.*

Geographic Coverage:	New Zealand
Environmental Assets and Type of Service:	All national parks, reserves and conservation areas of the country (both terrestrial and marine): landscape, seascape, wildlife
Other Information:	<i>Buyers:</i> all concessionaires; <i>Sellers:</i> Department of Conservation (DOC)

Abstract / Summary:

The DOC is the sole conservation management agency in New Zealand. It carries all conservation management functions for all national parks, reserves and conservation areas of the country, including “marine” issues and “off-estate” advocacy for conservation. By law, DOC cannot set fees for entry to any public conservation areas. However, it can set fees for the use of facilities and services. It can also issue “concession” contracts to individuals and businesses to conduct commercial activities, such as tourism, horticulture, telecommunications and commercial filming, among others. A fee is required for every concession contract being issued. DOC raises around US\$23.6M per year from fees charges and permits equivalent to 15 per cent of the Department’s annual budget. DOC is allowed to retain all these revenues.

60. Malavasi, E and J. Kellenberg. *Program of Payments for Ecological Services in Costa Rica. Downloaded from the Internet.*

Geographic Coverage:	Costa Rica
Environmental Asset:	Forests: mitigation of GHG emissions, hydrological services, biodiversity conservation and provision of scenic beauty for recreation and ecotourism
Other Information:	<i>Buyers:</i> Energía Global, Hidroeléctrica Platanar, Compañía Nacional de Fuerza y Luz, Florida Ice & Farm; <i>Sellers:</i> Land owners; Brokers: Fondo Nacional de Financiamiento Forestal (FONAFIFO) and the Sistema Nacional de Areas de Conservacion (SINAC)

Abstract:

The Costa Rican Payments for Environmental Services Program aims to protect primary forest, allow secondary forest to flourish, and promote forest plantations to meet industrial demands for lumber and other wood products. This paper provides a brief description of the origin of the programme and its current design. It also enumerates three types of PES contracts: (1) forest conservation contracts: US\$210/ha (equivalent to \$42/ha/yr), disbursed evenly over a five-year period, for forest conservation easements. Eighty-five per cent of contracts in the PES programme to date support forest conservation easements. Contracts are for 5 years, but can be renewed depending on availability of funds; (2) sustainable forest management contracts: US\$327/ha, disbursed over a five-year period, for sustainable forest management easements. Nine per cent of contracts in the ESP programme support sustainable forest management. Landowners must make a commitment to maintain forested areas for a period of 15 years; and (3) reforestation contracts: US\$537/ha, disbursed over a five-year period, for reforestation

easements. Landowners must make a commitment to maintain reforested areas for a period of 15 to 20 years, depending on the tree species. Six per cent of contracts in the ESP programme support reforestation of degraded and abandoned agricultural lands.

- 61. Martin, A. 2000. *The Contribution of Ecotourism Activities within the KwaZuluNatal Nature Conservation Service as discussed in Financing Protected Areas Task Force of the World Commission on Protected Areas (WCPA) of IUCN, in collaboration with the Economics Unit of IUCN (2000) Financing Protected Areas. IUCN. Gland, Switzerland and Cambridge, UK.***

Geographic Coverage: South Africa

Environmental Assets and Type of Service: All protected areas both marine and terrestrial: landscape/seascape beauty, wildlife and biodiversity conservation

Other Information: *Buyers:* recreationists/ tourists; *Seller:* KwaZuluNatal Nature Conservation Service

Abstract / Summary:

KwaZuluNatal Nature Conservation Service is responsible for the management of protected areas in the province of KwaZuluNatal, South Africa. Around 49 per cent of the agency's funding comes from government budget and 51 per cent is generated in a number of ways including ecotourism activities.

- 62. May, P H, Boyd, E, Veiga, F and M Chang. 2004. *Local Sustainable Development Effects of Forest Carbon Projects in Brazil and Bolivia: A View from the Field. International Institute for Environment and Development, London.***

Geographic Coverage: Brazil and Bolivia in specific project sites

Environmental Asset and Type of Service: Forests: carbon sequestration

Other Information: *Buyers:* Plantar Project — Prototype Carbon Fund; Peugeot Project — Peugeot Company that is using the project to build up its environment-friendly image. The project will be used to claim carbon credits; Bananal Project – AES Barry Foundation, a philanthropic group linked to a United Kingdom gas utility company; Noel Kempff Project – The Nature Conservancy, consortium of companies including the American Electric Power, with the Bolivian government

Sellers: Plantar Project — the Plantar company itself, which is using the project for clean development mechanism eligibility for its continued use of charcoal as a reducer for pig iron manufacture rather than convert to mineral coke; Peugeot Project — Instituto Pro-Natura, a social and environmental non-government organization, which has a long-term presence in the project region; Bananal Project — Instituto Ecologica, a regional social and environmental non-government organization; Noel Kempff Project — Pre-existing logging companies

Broker: Peugeot Project — Office National des Forest, a government institution that tends to the public forests in France

Amount Paid and Payment Arrangements: Up to US\$1.00/ha/mo, depending on vegetal cover of the land, paid quarterly. Level of payments is based on political negotiation rather than technical analysis of hydrology, water valuation or financial planning. Fund is sourced from percentage of water tariff, an initial investment from a foreign donor and the FAO-funded project. Other sources include national and international sources. It is maintained in an account with the National Development Bank.

Abstract/Summary:

The project assesses the socioeconomic and environmental impacts of three of the principal pilot carbon sequestration projects in Brazil (Plantar, Peugeot and Bananal) and one in Bolivia (Noel Kempff).

The Plantar project aims to make the pig-iron sector viable through international carbon credits, whereas the Peugeot counteracts the negative environmental image of the high CO₂-emitting car-manufacturing industry. The Bananal project is experimental with its social carbon profile seeking to link local socioenvironmental development to carbon generation. The Noel Kempff project stands out in its approach to carbon retention in the tropical forest by buying back logging concessions and promoting alternative activities to forest encroachment by local communities. Some lessons learned include the following: (1) it is necessary to seek stakeholders' opinions objectively and to ensure that the project concept is transparent to all starting from inception; (2) social inclusion is key to success of local development projects; and, (3) forest carbon projects depend on a reasonably large minimum area to guarantee profitability.

63. May, PH, Veiga Neto, F, Denardin, V and W Loureiro. 2002. Using Fiscal Instruments to Encourage Conservation: Municipal Responses to the 'Ecological' Value-added Tax in Parana and Minas Gerais, Brazil. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. pp 173 – 199.

Geographic Coverage:	Brazil
Environmental Asset and Services:	Forests: various; bundled services
Other Information:	<i>Buyers:</i> State governments; <i>Sellers:</i> Municipal governments; funds also flow to landowners

Abstract/Summary:

The value-added tax (Imposto sobre Circulacao de Mercadorias e Servicos — ICMS) is a state levy on the circulation of goods, services, energy and communications. Part of the ICMS collections is distributed to municipalities following national and state formula. In the ecological value-added tax, ICMS-E, the share of municipalities from the ICMS is made on the basis of their performance on various environmental criteria, including extent of conservation areas. It is the first economic instrument to pay for services provided by standing forests in Brazil. The paper seeks to better understand the ICMS-E scheme through a combination of quantitative and qualitative analyses. Primary data from municipalities were used in the analyses.

The analyses show that ICMS-E scheme has been associated with significant increase in the number and size of protected areas in the states where it has been adopted, prompting other states to take it up as a means to encourage natural resource conservation through revenue reallocation, rather than additional expenditure. The paper also recommends areas for improvement as the scheme is being adopted by more Brazilian states.

64. Mayrand, K and M Paquin. 2004. *Payments for Environmental Services: A Survey and Assessment of Current Schemes*. Commission for Environmental Cooperation of North America

Geographic Coverage:	Western Hemisphere
Environmental Asset Type of Service:	Forests: water services, biodiversity, carbon sequestration, landscape beauty
Other Information:	<i>Buyer:</i> Various; <i>Sellers:</i> Seller: Various

Abstract/Summary:

This report surveys payments for environmental services schemes in the Western Hemisphere and analyses the main differences and similarities as well as strengths and limitations of payments for environmental services models. It also identifies conditions for the success of payments for environmental services schemes and highlights experiences that could emerge as best practices for payments for environmental services to maximize their positive environmental and socioeconomic impacts. It finds that payments for environmental services systems work best when services are visible and beneficiaries are well organized, and when land-user communities are well structured, have clear and secure property rights, strong legal frameworks, and when value of environmental services is high for beneficiaries and the costs of providing services are low. From the review of markets for environmental services, the report deems that there are difficult tradeoffs between cost-efficiency, effectiveness and equity involved in developing payments for environmental services schemes.

The report concludes that payments for environmental services is a relatively young market-based instrument for environmental protection. These are highly adaptable and several models already coexist in different markets and locations. However, there is no single, transferable model for payments for environmental services schemes, thus, each must be tailored to the specific conditions of the market for a given environmental service at specific locations.

65. Milne, M and P Arroyo. 2004. *Assessing the Livelihood Benefits to Communities from the Profafor Carbon Sequestration Project, Ecuador. (Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provide)*. World Agroforestry Centre (ICRAF), Indonesia.

Geographic Coverage:	Ecuador
Environmental Asset and Type of Service:	Forests: carbon sequestration
Other Information:	<i>Buyers:</i> Foreign investors; <i>Sellers:</i> Upland communities

Summary:

Results of the assessment show that, in the short term, financial contribution, technical assistance and provision of planting materials have, to differing degrees, increased the financial, environmental, human, social and physical capital of project participants. The subsidy has been used for paying local wages and food for the participants to establish the plantation. There have, however, been some reported conflicts in the community over the use of land for plantation since grazing of livestock is prohibited. In the long run, all participating communities expected that the plantation would generate increased income for members. The projections of communities on the importance of forestry activities, especially in terms of contribution to income, were varied.

66. Miranda, M, Porras, I T and M L Moreno. 2003. *The Social Impacts of Payments for Environmental Services in Costa Rica. A Quantitative Field Survey and Analysis of the Virilla Watershed*. International Institute for Environment and Development, London.

Geographic Coverage:	Costa Rica
Environmental Asset and Type of Service:	Forests: water services, biodiversity, carbon sequestration, landscape beauty
Other Information:	<i>Buyers:</i> Various (hydroelectric companies, tourism agencies, international investors, etc.; <i>Sellers:</i> Forestry owners; <i>Coordinator:</i> FONAFIFO (National Forestry Finance Fund); <i>Broker:</i> Costa Rican Office for Joint Implementation (OCIC)

Summary:

This study aims to look at the impacts the PES programme has on poverty and other social factors, using as a basis for the analysis of the *Sustainable Livelihoods Framework*, and examining the effects the programme has on financial, human, social, physical and environmental assets in the Central Volcanic Mountain Range Conservation Area, with a particular focus on the Virilla watershed. Results of the study show landowners were relatively wealthy and well-educated, limiting the conclusions that the study could have in relation to poverty alleviation. Moreover, most of the landowners who took part in the survey were not dependent on their land for their livelihood.

The study also shows that environmental benefits in the form of protection of water sources, improvement of water quality, protection of forest for present and future generations, and improvements of degraded lands were the most important benefits obtained from the PES programme. Economic benefits, such as the payments and tax relief, were reported by a third of the sample. Protecting the land against squatters was also seen as an important benefit of the programme. Other benefits reported included potentials for new economic activities (such as ecotourism projects), education, and technical support received from FUNDECOR.

67. Norbu, L. 2004. *Nature Conservation and Biodiversity for Poverty Reduction — Case of Bhutan*. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea

Geographic Coverage:	Bhutan
Environmental Asset and Type of Service:	Forests: carbon sequestration, biodiversity conservation and landscape beauty
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various

Abstract:

Forests and biodiversity play a significant role in the national and local economy of Bhutan. The Royal Government considers conservation of nature and biodiversity not as constraints, but as opportunities for economic development. The protection of fragile watersheds by forests for soil protection and water discharge maintenance are critical to offset any negative impacts on settlement, agriculture and hydropower. Bhutan Vision 2020 expresses the need to balance economic development with cultural and environmental conservation. The opportunities for nature conservation and biodiversity contributing to reducing poverty are great, but they will remain as ever a wishful list of opportunities if they are not converted to tangible benefits for the poor.

68. Murtough, G, Aretino, B and A Matysek. 2002. *Creating Markets for Ecosystem Services - A Productivity Commission Staff Research Paper*. AusInfo, Canberra.

Geographic Coverage:	Australia
Environmental Asset and Type of Service:	Forest wildlife: biodiversity conservation
Other Information:	<i>Buyer:</i> Earth Sanctuaries Ltd. ; <i>Sellers:</i> mainly tourists and park visitors
Abstract:	

This report considers one example of private-sector involvement in conservation of biodiversity. Earth Sanctuaries Ltd. is the first publicly listed company in Australia to have conservation of wildlife as its primary goal. Earth Sanctuaries Ltd. operational strategy involves the following activities: acquiring land, erecting electrified fences, removing feral animals from the land and reintroducing selected native species. This strategy targets the threat to small native mammals (specifically marsupials), birds and reptiles that evolved in an environment devoid of exotic predators, such as foxes and cats. The company also seeks to educate the public on biodiversity and environmental issues. Moreover, the company conducts research on habitats and the diseases affecting native species and uses the information to educate its visitors and the public. Its funding comes mainly from ecotourism. Other sources include provision of consultancy and contract services and the sale of non-endangered captive animals. One important lesson that can be learned from this initiative is that private-sector activities can complement conservation activities by the public sector, both by adding the resources allocated by government for conservation and freeing up of government resources for other purposes.

69. OECD. 2003. *Harnessing Markets for Biodiversity: Towards Conservation and Sustainable Use*. OECD Paris.

Geographic Coverage:	Global
Environmental Asset and Type of Service:	Forests: biodiversity conservation
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various; <i>Payment Arrangements:</i> Varies depending on type of market
Abstract:	

This paper identifies the types of biodiversity products and services in light of its private/public good characteristics. It then proceeds to discuss the need to quantify the benefits of biodiversity and subsequently creates markets for its products and services. It also maintains that three types of markets can be created depending on the nature of biodiversity products and services. These are: (1) biodiversity as private goods — organic agriculture, sustainable forestry non-timber forest products, and genetic resources; (2) biodiversity as club goods — ecotourism, parks and reserves and ecological services; and (3) biodiversity as open access or pure public goods — individual transferable quotas in fisheries. This paper uses real examples to illustrate more clearly each type of market. Moreover, it discusses the role of financial mechanisms and community involvement as market enhancers for biodiversity conservation. Finally, the paper discusses the role of information in biodiversity conservation and the instruments used in addressing information asymmetries.

70. Padilla, J, Ansula, A and M. Tolosa. 2005. *Getting Users to Pay for Conservation: A Guide to Site-Based Sustainable User Fee Schemes*. WWF-Philippines, Quezon City, Philippines.

Geographic Coverage:	Mabini and Tingloy, Batangas, and Puerto Galera, Mindoro Oriental, Philippines
Environmental Asset and Type of Service:	Coral reefs: marine recreation
Other Information:	<i>Buyers:</i> Scuba divers; <i>Sellers:</i> LGUs of Mabini, Tingloy and Puerto Galera; <i>Broker:</i> WWF-Philippines
Abstract / Summary:	

This material provides a description of the economic, legal and institutional frameworks for conservation fees, including a description of the various mechanisms for generating funds from users of environmental goods and services. It also discusses the steps in developing and implementing conservation fees. The application starts from science and research as inputs to policy formulation and eventually to management. The lessons learned from the limited application include the following: (1) a conservation fee scheme should be developed in the context of a Coastal Resource Management Plan; (2) science and research proved instrumental in the design of a conservation fee scheme; (3) effective IEC campaigns ensure the success of a conservation fee scheme; (4) stakeholder involvement and participation are essential for conservation fee schemes to be sustainable and socially acceptable; and (5) the effectiveness of the scheme bears on how the revenues generated contribute to better management of the environmental asset.

71. Pagiola, S, Bishop, J and N Landell-Mills. 2002. *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. 299 pp.

Geographic Coverage:	Global
Environmental Asset and Type of Service:	Forests: watershed protection, biodiversity conservation, carbon sequestration
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various; <i>Brokers:</i> Various

Abstract/Summary:

This book outlines a wide-ranging sample of the growing number of cases in which ecosystem services are finding real markets and real revenue flows. It covers experiences with emerging markets in carbon, water, and biodiversity from Brazil to India, and Australia to the United States. It touches on the diversity of mechanisms, from self-organized private deals and open trading schemes to public payment schemes. It also highlights the range of participants and beneficiaries, including national governments, municipalities, companies, environmental groups, and local communities.

- 72. Pagiola, S, Agostini, P, Gobbi, J, de Haan, C, Ibrahim, M, Murgueitio, E, Ramírez, E, Rosales, M and J P Ruíz. 2004. *Paying for Biodiversity Conservation Services in Agricultural Landscapes*. Environment Department No. 96. Washington D.C.: The World Bank Environment Department.**

Geographic Coverage:	Colombia, Costa Rica, Nicaragua
Environmental Asset and Service:	Forests: carbon sequestration and biodiversity conservation through adoption of silvopastoral practices in degraded pasture areas
Other Information:	<i>Buyers</i> : Participating land users; <i>Sellers</i> : Landowners

Abstract / Summary:

This paper describes the contract mechanism developed for the RISEMP, which is being implemented with financing from the Global Environment Facility. The project is piloting the use of payment for environmental services as a means for generating biodiversity conservation, carbon sequestration and watershed protection in Colombia, Costa Rica and Nicaragua. The mechanisms being designed attempt to address the issues of (1) measuring the actual amount of environmental services being provided, so that appropriate payments can be made; (2) providing payments in a way that resulted in the desired change in land use; and (3) avoiding the creation of perverse incentives (e.g. for land users to cut down existing trees so as to qualify for additional payments for tree planting). Two variants of the proposed payment mechanism are being tested, with participating land users assigned randomly to one or the other. The project also includes extensive monitoring of the effectiveness of each mechanism in stimulating adoption of the proposed measures and of the resulting impact on environmental services and on household welfare. These features, together with the three-country approach, will provide in the coming years a very rich dataset for testing the use of contract mechanisms for biodiversity conservation.

- 73. Pagiola, S, Landell-Mills, N, Bishop, J. 2002. Market-based Mechanisms for Forest Conservation and Development. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. pp 1 – 13.**

Geographic Coverage:	Global
Environmental Asset and Type of Service:	Forests: various
Other Information:	<i>Buyers</i> : Various; <i>Sellers</i> : Various; <i>Brokers</i> : Various

Abstract/Summary:

This paper, which is the first chapter of the book, provides an overview of the book contents. It starts with the discussion on the benefits provided by forests, which include watershed protection, biodiversity conservation, carbon sequestration and landscape beauty. However, only the first three services are covered by the book as ecotourism for appreciation of landscape beauty is sufficiently covered elsewhere. The paper then investigates why, despite the enormous forest services, deforestation occurred in many parts of the world. The paper suggests various reasons but focuses on situations where market failure has played a key role.

74. Pagiola, S and I Ruthenberg. 2002. Selling Biodiversity in a Coffee Cup: Shade Grown Coffee and Conservation in Mesoamerica. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. pp 103 – 126.

Geographic Coverage:	Mesoamerica – Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama
Environmental Asset and Type of Service:	Forests: biodiversity conservation
Other Information	<i>Buyers:</i> Consumers, primarily in North America, willing to pay a premium for biodiversity-friendly coffee; <i>Sellers:</i> Coffee growers in two project sites; <i>Brokers:</i> Certification entities; donors (GEF, WB, etc.); NGOs (e.g., CI); <i>Amount Paid:</i> Premium for certified coffee estimated at 10% - 15%; <i>Year Payments Started:</i> Certification of farms started in 1999

Abstract/Summary:

Preserving biodiversity in agricultural landscapes is the objective of promoting shade-grown coffee. The mechanism seeks to harness consumers’ willingness to pay for conservation by inducing them to pay a premium for biodiversity-friendly shade-grown coffee. This paper examines efforts to apply this approach in Mesoamerica, particularly in two projects — Promotion of Biodiversity Conservation within Coffee Landscapes Project in El Salvador, and the El Triunfo Biosphere Reserve: Habitat Enhancement in Productive Landscapes Project in Mexico. As a means of capturing and channeling consumer willingness to pay for conservation, shade-grown coffee is still a very new mechanism. The experience in two sites shows that making this mechanism work require substantial efforts, but no problem is insurmountable — certification could be made to work even with small, scattered, and dispersed production and little extant social capital. Such efforts require some degree of external assistance to ensure access by small producers.

75. Pagiola, S. 1998. Economic Analysis of Incentives for Soil Conservation. In: Sanders, D W, Huszar, P C, Sombatpanit, S and T Enters (eds). *Using Incentives for Soil Conservation*. World Association of Soil and Water Conservation, International Board for Soil Research and Management, and the Soil and Water Conservation Society of Thailand. Science Publishers, Inc.

Geographic Coverage:	Kenya
Environmental Asset and Type of Service:	Soil: erosion prevention

Abstract/Summary:

This paper uses a simple graphical model to examine the factors that drive farmers to adopt one land-use practice rather than another and the role that government policies might play in encouraging farmers to adopt more conservation practices, and illustrates the results with data from semi-arid Kenya. When on-site productivity is the primary concern, farmers tend to have strong incentives to adopt conservation measures. Divergences between privately-optimal and socially-optimal conservation behavior are usually caused either by differences in the valuation of inputs and outputs or because constraints prevent farmers from adopting otherwise profitable conservation practices. Unless these problems are addressed directly, incentive schemes are unlikely to prove effective. When off-site impacts are the primary concern, farmers have no direct incentive to take appropriate remedial actions. In such cases, a subsidy scheme may be called for. Even in such cases, close attention must be paid to price distortions and to any constraints to the adoption of conservation measures.

- 76. Pagiola, S. 2002. Paying for Water Services in Central America: Learning from Costa Rica. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. pp 37 – 61.**

Geographic Coverage: Central America, Costa Rica
 Environmental Asset and Type of Service: Forests: watershed protection

Other Information: *Buyers*: Hydroelectric power plants (public- and private-owned); beer maker; *Sellers*: Private landowners; NGO that owns the watershed; *Brokers*: Government agency – FONAFIFO – Fondo Nacional de Financiamiento Forestal, implementing the PSA (Pago por Servicios Ambientales)

Abstract/Summary:

Costa Rica pioneered the approach whereby landowners had a direct incentive to include environmental services in their land-use decisions, resulting in more socially-optimal land uses through the PSA programme. Several countries in the region have been watching this experience closely and are beginning to work on similar programmes. This paper examines Costa Rica's PSA programme in dealing with water services and discusses how the lessons of this experience are beginning to be applied in other countries with similar problems.

- 77. Palo, M. 2004. Poverty Reduction by Tropical Forests: A Rhetoric or Viable Option. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea, pp. 7-24.**

Geographic Coverage: Global
 Environmental Asset and Type of Service: Forests: carbon sequestration

Abstract:

This paper describes the concept of poverty and its linkage with tropical forests. It also analyses undervaluation and deforestation of tropical forests by corruption. Moreover, it evaluates privatization and decentralization as policy instruments to facilitate large-scale poverty reduction by tropical forests and illustrates how Finland has applied the five-capital approach in reducing poverty by forests.

To examine the relationship amongst poverty, relative forest area, and corruption, this study regressed income (GDP/capita) and Human Development Index with relative forest area, population density, Corruption Perception Index and some other independent variables in 35–83 tropical countries. This sample covers 70–95 per cent of the total tropical forest area.

Results show that poverty is strongly correlated with the relative forest area. This implies that high population density at low-income levels advances forest degradation, deforestation and desertification. Deteriorated forest environment increases poverty and subsequently population pressure on the remaining forest and so on, creating a vicious cycle. This paper concludes that the prevailing practice of administrative pricing of the standing timber undervalues the tropical forest and the widely prevailing corruption in the tropics is blocking the effectiveness of both government policies and the market in controlling the allocation, production and distribution of forest products and services. Thus, poverty reduction will remain as rhetoric unless radical changes take place in the implementation of forest policies. It may become a viable option in a couple of decades only when corruption is significantly reduced and a major devolution of the prevailing socialistic forestry takes place.

78. Perez, L. 2005. Asian Conservation Company and Investments in Ten Knots Group/El Nido Resorts. In: Padilla, J E, Tongson, E and R Lasco (eds), PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp. 144-150.

Geographic Coverage:	Philippines
Environmental Asset and Type of Service:	Islands, marine resources: landscape/seascape beauty
Other Information:	<i>Buyers:</i> ecotourists, SCUBA divers, etc.; <i>Seller:</i> Asian Conservation Company/Ten Knots/El Nido Resorts

Abstract/ Summary:

The initiative of the Asian Conservation Company is one of the examples of private sector involvement in biodiversity conservation in the Philippines. The company holds a major share of Ten Knots Group that owns the El Nido Resorts in Palawan. It believes that by investing in environmentally sensitive companies, it can generate an acceptable financial return to investors and, at the same time, provide employment and educational opportunities to the local communities. These benefits create a reciprocal willingness among the communities to protect the natural resources in the area. With the increasingly competitive leisure and hospitality industry, Ten Knots Group has realized the need to set a high standard and priority for environmental protection. One major challenge is how to sustainably finance the efforts for environmental protection. It has addressed this by institutionalizing payment systems for the landscape/seascape beauty of El Nido. Payments come from internal (those embedded in the company’s operational costs and external (those which are provided by donors, Environmental Guarantee Fund and Integrated Protected Area Fund) sources.

79. Qu Jiashu. 2002. Local Experience with the Ecological Compensation Scheme in Guangdong Province as discussed in CCICED Western China Forest Grasslands Task Force. *Workshop on Payment Schemes for Environmental Services: Summary of Proceedings*. 33 pp.

Geographic Coverage:	Guangdong Province, Mainland China
Environmental Asset Type of Service:	Forests: all services
Other Information:	<i>Buyers:</i> Forest operators; <i>Sellers:</i> Government

Abstract / Summary:

The scheme initially targeted 51.02 million mu of provincial-level public-benefits forest with provincial funding. Contracts have been signed directly with forest operators. There have also been cases of rental, contracting out, and establishment of share system forestry centers.

Problems encountered in implementation include difficulty in quantifying ecological benefits, the low level of compensation, and difficulty in compensating different forest areas according to different levels of ecological function. The level of compensation has been raised from 2.5 yuan per mu to four yuan per mu; it is still way below the ideal level. Plans for the future include: (1) establishment of a high-quality ecological forest system, (2) strengthening of accounting and management, and (3) raising the funding standard to 30 yuan per mu.

- 80. Ramos, A. 2005. Introduction to Clean Development Mechanism (CDM). In: Padilla, J E, Tongson, E and R Lasco (eds), PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp. 151-158.**

Geographic Coverage:	Philippines
Environmental Asset and Type of Service:	Forests: carbon sequestration
Other Information:	Buyers: Annex 1 countries such as Japan, the Netherlands (through CERUPT/ERUPT programmes), UK, EU, Austria, Finland, and companies like Tokyo Electric, etc.; Carbon Funds — Prototype Carbon Fund (PCF), Community Development Carbon Fund (CDCF), Japan Carbon Fund (JCF), etc.; Brokers: Natsource, EcoSecurities, Cantor Fitzgerald; Sellers: Non-Annex 1 companies such PNOC EC, North Wind both in Philippines; ATBiopower in Thailand; Bumibiopower in Malaysia.

Summary/ Abstract:

The Clean Development Mechanism assists Non-Annex I countries in achieving sustainable development as they contribute to global efforts to reduce green house gases emissions. Countries hosting clean development mechanism projects benefit through investment, technology transfer, and local sustainable development. At the same time, the mechanism allows Annex I countries to meet their obligations to reduce greenhouse gases emissions through a flexible and cost-effective manner with the use of Certified Emissions Reduction Units. Annex I countries and companies can obtain Certified Emissions Reductions from Clean Development Mechanism projects through direct investments or by buying the Certified Emissions Reductions.

While the Clean Development Mechanism provides many opportunities to reduce greenhouse gases emissions, there are still barriers to its smooth and effective implementation. At the international level, the modalities and procedures are constantly being refined, causing delays within the process. Moreover, there is no framework yet for the post-2012 commitment period. At the national level, the Philippine Designated National Authority is lagging behind private sector and the proposed institutional structure and approval process are too bureaucratic.

- 81. Rojas, M and B1 Aylward. 2003. *What are we Learning from the Experiences with Markets for Environmental Services in Costa Rica? A Review and Critique of the Literature*. International Institute for Environment and Development, London.**

Geographic Coverage:	Costa Rica
Environmental Asset Type of Service:	Forests: biodiversity conservation, watershed protection, carbon sequestration and landscape beauty; bundled services
Other Information:	Buyers: Various; Sellers: Various

Summary:

This paper discusses the following in the context of Costa Rica's experience in payments for environmental services: (1) the local origins of the concept of payments and markets for environmental services and how they

have developed over time, particularly in relation to the broader international development of the concept and local necessities/realities; (2) the types of existing initiatives related to markets for environmental services, and who is participating in such initiatives; (3) the knowledge base that underpins market development, i.e. the extent to which markets are based on specific scientific and technical knowledge regarding the biophysical, economic and social relationships involved as opposed to general views on the subject; and (4) the initiatives undertaken and underway to date with respect to the monitoring and evaluation of the experience with payments and markets for environmental services and to what extent the literature assesses these initiatives in terms of economic efficiency, environmental effectiveness, and social equity and/or poverty reduction.

Some of the initiatives being assessed include: bioprospecting contracts (National Institute of Biodiversity (INBio), site entrance fees (flora, fauna and natural landscapes of Costa Rica), transfer payments for scenic beauty: ProRios, ecological services contracts: Del Oro — Guanacaste Conservation Area, overseas development assistance and GEF funding: Ecomarkets Project, transfer payments for environmental services (FONAFIFO-hydropower companies), and voluntary contracts (La Esperanza Hydropower Project and Monteverde Conservation League), among others.

The paper concludes by drawing out some of the lessons learned and making recommendations regarding practical steps that other countries, researchers and financing organizations might take to improve the process of launching such initiatives in future.

82. Rosa, H, Kandel, S, Dimas, L and E Mendez. 2002. *Payments for Environmental Services and Rural Communities: Lessons from the Americas*. University of Massachusetts Amherst: Political Economy Research Institute.

Geographic Coverage:	The Americas (Costa Rica, Mexico, Brazil, El Salvador, New York)
Environmental Asset and Type of Service:	Forests: watershed protection, carbon sequestration, biodiversity and other water-related environmental services
Other Information:	<i>Buyer:</i> Various; <i>Seller:</i> Various
Abstract / Summary:	

Payments for environmental services-related processes that benefit rural communities should be inserted into broader strategies geared towards expanding the whole basket of assets in the hands of the poor. Payments for environmental services-related *internalization strategies* need to be embedded within broader natural asset-building strategies that simultaneously expand the control of the communities over the resource base through *redistribution* and *(re)appropriation*, while mobilizing resources for direct *investments* geared towards improving and restoring natural assets to the hands of the poor. Payments for environmental services-related processes can better meet the needs of rural communities, when they adopt a *landscape perspective* that takes into account all the components of the landscape and their interactions. Supporting *social capital* accumulation is also crucial for furthering agreements for landscape management schemes that can guarantee the conservation, expansion and continuity in the provision of environmental services.

83. Rosales, R M. 2003. *Developing Pro-poor Markets for Environmental Services in the Philippines*. International Institute for Environment and Development, London. 99pp.

Geographic Coverage:	Philippines
Environmental Assets and Type of Service:	Marine protected areas, watersheds and forests: landscape/ seascape, watershed protection, biodiversity conservation, carbon sequestration
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Primarily government through LGUs, PAMB and other management bodies

Abstract / Summary:

The paper lists various markets for environmental services in the Philippines. It also discusses their institutional support mechanisms. These include the National Integrated Protected Area Systems, Protected Area Management Board, and the Integrated Protected Area Fund. This paper also highlights the existing initiatives to develop markets for environmental services in the country. Two case studies are presented: (1) Apo Island, wherein the national government serves as the institutional mechanism for market development in protected areas under the National Integrated Protected Areas System ; and (2) a community-based organization in Balian, Pangil, Laguna, that provides watershed-protection services to its constituents and residents of the village where the watershed is located.

A socioeconomic framework for evaluating and monitoring markets for environmental services is also discussed. Two case studies are presented: (1) Apo Island Protected Landscape and Seascape; and (2) Reforestation, Watershed Management, Health and/or Environmental Enhancement Fund of the Department of Energy.

84. Salas, J. 2005. Environmental Service Payments for the Maasin Watershed: A Case Study. In: Padilla, J E, Tongson, E and R Lasco (eds), *PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation, Manila, March 1-2 2005*, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp. 103-115.

Geographic Coverage:	Philippines
Environmental Asset and Type of Service:	Forests: watershed services
Other Information:	<i>Buyers:</i> water users downstream <i>Seller:</i>

Summary/ Abstract:

This paper discusses the lessons learned from a hundred-year history of the Maasin Watershed in Panay Island. This watershed is the source of Iloilo City's potable water. The history of Maasin watershed reveals that the position of the provider/keeper as well as seller of environmental services has been occupied by several institutions, including the central government through a franchised quasi-public corporation, a national government agency, an local government unit, and the watershed direct users living in and around the area. Despite occupying the same position in the market, these institutions nonetheless play varied roles. Various environmental service payments mechanisms have been experimented. This paper concludes that for environmental service payments to be effective, constituents have to be well-informed, must understand the characteristics of and dynamics inside the watershed, and must appreciate the integrated approach to watershed protection.

85. Salzman, J and J B Ruhl. 2002. Paying to Protect Watershed Services: Wetland Banking in the United States. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. pp 77 – 90.

Geographic Coverage:	United States
Environmental Asset and Type of Service:	Wetlands: biodiversity conservation
Other Information:	<i>Buyers:</i> Real estate developers, both private and government; <i>Sellers:</i> Wetland ‘banks; <i>Brokers:</i> Army Corps of Engineers; Environmental Protection Agency; <i>Payment Arrangements:</i> Varies on characteristics of the wetland mitigation ‘bank’; <i>Year Payment Started:</i> Early 1990s

Abstract/Summary:

In wetlands mitigation banking, a “bank” of wetlands habitat is created, restored, or preserved and then made available to developers of wetlands habitat who must “buy” habitat mitigation as a condition of government approval for development. The paper describes the legal and institutional background to wetlands mitigation banking, identifies the expected advantages, and highlights emerging difficulties. The discussion focuses on two main limitations: currency adequacy and exchange adequacy. The paper ends by drawing out key lessons for market-based approaches to watershed protection.

86. Satyanarayana, M and M How. 2004. Forest Producers and Rural Farmers can Benefit from the Clean Development Mechanism. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea, pp. 35-40.

Geographic Coverage:	Various countries
Environmental Asset and Type of Service:	Forests: Carbon sequestration
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Forest producers and rural communities

Abstract:

This paper outlines how the Clean Development Mechanism in the context of Land Use, Land-Use Change and Forestry of the Kyoto Protocol benefits forest producers and rural communities in enhancing their livelihoods. It examines the potentials of afforestation and reforestation activities to mitigate climate change. Moreover, the paper illustrates some pilot projects undertaken in various parts of the world so that the developing countries in the Asia-Pacific region can learn from experiences elsewhere. The paper also underlines the limitations and identifies the issues to be addressed, and recommends a holistic approach to integrate carbon sequestration objectives with improving livelihoods to achieve the ultimate goal of sustainable development coupled with poverty eradication.

Pilot Projects Cited:

(1) Scoler Te (the tree that grows) and the Plan Vivo System, Mexico

Buyer:	International Automobile Federation, companies, individuals and institutions
Seller:	Forest producers and rural communities
Broker:	Fondo BioClimatico (local trust fund)
Price:	US\$2.7 per t CO ₂ (US\$10 per tC)

Brief description of scheme:

Funds are used to provide farmers with carbon payments to cover the costs of establishing agroforestry systems, small-scale plantations and community reforestation activities. Local promoters help farmers draw up working plans (known as *Planes Vivos*) for forestry or agroforestry systems that reflect their specific needs, priorities and capabilities. These *Planes Vivos* are assessed for technical feasibility, socioeconomic and environmental impacts and carbon sequestration potential.

The Scoler Te project is now run by a trust fund, which has become a financially viable organization, whose income is derived from the sale of carbon services. Over 400 individuals from about 30 communities, representing four different ethnic groups and a wide range of agro-ecosystems participated in this project.

(2) Tamarind Project in Southern India

Buyer:	Future Forests-United Kingdom
Seller:	Small farmers through Women for Sustainable Development NGO

Brief Description of Scheme:

Under this project, mango and tamarind plantations have been raised over each 2ha of land belonging to a small farmer. It is expected that 18tC would be fixed over 6 years. It has been agreed to sell the fixed carbon at the rate of US\$10/tC which provides INR8640. The amount is to be paid by the company to a farmer in five installments starting from the 2nd year. The farmer would receive 50 per cent of the amount, i.e. INR4320 in the 2nd year as the 1st installment, 20 per cent of the amount as 2nd installment in the 3rd year, and the balance of 30 per cent for the remaining three installments in the 4th, 5th and 6th years, respectively. The farmers would then be able to get additional income for the sale of carbon in addition to the income from their fruit harvests, etc.

(3) Costa Rican model

Buyer:	Various; Norwegian Consortium
Seller:	Landowners
Brokers:	National Forestry Financing Fund Costa Rican Office for Joint Implementation

Brief Description of Scheme:

Landowners are encouraged to opt for forestry-related land uses by providing direct payment for environmental services. Incentives are paid to landowners, following the signing of a contract to keep land under a specified use for at least 20 years. Farmers who sign up for these incentives hand over their environmental service rights to the government, which, in turn, sells them to investors.

FONAFIFO, the Forestry Financing Fund under the Ministry of Energy and Environment, receives and analyses applications, conducts field verifications, carries out the payments and monitors the forestry projects. Carbon credits are marketed by the Costa Rican Office for Joint Implementation, which acts as a “one- stop shop” for buying and selling of carbon credits known as Certified Tradable Offsets or CTOs. International investors purchase the CTOs developed either by the government or individual developers from the OCIC. By centralizing carbon trading, the Costa Rican Office for Joint Implementation lowers the transaction costs. The first batch of carbon credits (200,000 tonnes of carbon) was sold to a Norwegian consortium at US\$10/tC (US\$2.70/tCO₂), for a total of US\$2 million.

(4) The Malaysian experiment

The Innoprise–FACE Foundation Rainforest Rehabilitation Project, a cooperative venture between the Sabah Foundation in Malaysia and the FACE Foundation of the Netherlands, aims to rehabilitate 25,000ha of degraded land. The total investment committed by the FACE Foundation amounts to US\$15 million. It is expected that the project will sequester at least 4.25 million tonnes of carbon during its lifetime at an average cost of US\$3.52 /tC. The planting phase will last for 25 years and forests will be maintained for 99 years. At the end of the first 60-year growth cycle, these forests will be exploited for timber, which belongs to the Sabah Foundation, and the FACE Foundation will have exclusive rights to the carbon sequestered through the 99 years of the project.

87. Scherr, S, White, A and A Khare. 2004. *Current Status and Future Potentials of Markets for Ecosystem Services of Tropical Forests: An Overview*. International Tropical Timber Council.

Geographic Coverage:	Global
Environmental Asset and Services:	Tropical forests: watershed protection, biodiversity conservation and carbon sequestration
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various
Abstract/ Summary:	

The widespread emergence of markets and payment schemes for forest ecosystem services has been apparent in the past decade. Recent reviews, however, indicate that these activities are still nascent, limited in scope and scale, and are pilot-tested in developed countries where biophysical science tends to be stronger and legal frameworks and institutions exist that permit the development of more sophisticated markets. It is now increasingly recognized that protected area approaches to conservation are limited and those concerned need to find additional revenue sources to be financially viable and competitive.

This paper reviews the diverse reasons for growing interest in ecosystem service markets in tropical countries. It proceeds to assess the current status of markets for watershed protection, biodiversity protection and carbon sequestration. For each environmental service, it provides examples of schemes being undertaken in various parts of the world. This paper also evaluates the emerging markets from the perspectives of forest owners and producers, including commercial timber producers, forest and farming communities, and government forest agencies.

Key findings are as follows: (1) the total value of direct ecosystem service payments in tropical countries is presently modest, but has grown dramatically over the past decade and is significant, particularly to low-income producers; (2) markets for forest ecosystem services are expected to grow, in both developed and developing countries, over the next 20 years. The potential for increased demand, and increased payment, for watershed services is immense. Water demand is projected to double, if not triple, over the next 50 years and much of this growth will be in developing countries; (3) governments play a vital role as the principal direct buyers of many ecosystem services, and catalysts for many private sector direct-payment schemes; (4) ecosystem service payments will in most cases cover only a modest share of the costs of good forest management; (5) property rights and national legal frameworks are necessary for ecosystem service markets to develop; (6) these markets are not likely to contribute substantially to poverty alleviation unless proactive efforts are made to recognize rights and shape markets to provide equal access to low-income producers of tropical forest ecosystem services; and (7) new market institutions are needed to reduce transaction costs and financial risks of the PES schemes.

88. Scherr, S. 2002. Factors to Consider in Choosing Instruments to Promote Environmental Services as discussed in CCICED Western China Forest Grasslands Task Force. *Workshop on Payment Schemes for Environmental Services: Summary of Proceedings*. 33pp.

Geographic Coverage: As applied in mainland China

Environmental Asset and Type of Service: Forests: all ecological services

Other Services: *Buyers*: Not applicable; *Sellers*: Not applicable

Abstract / Summary:

Review of the advantages and disadvantages of the various instruments indicates that two good opportunities for China in coming years would be to support: (1) self-regulation and innovation by communities and (2) self-organized private deals. The latter may require legal systems for enforcement, but could also be achieved through informal arrangements. As experienced with the development of China's Ecological Compensation Scheme, ecotourists and other users of environmental services are not willing to contribute to general funds; however, they are to be willing to pay specific producers for services that benefit them directly. In general, more than one policy instrument is almost always needed. No one policy instrument is superior; but, rather, choice of instrument depends on the local situation, including the capacity of both the public and private sectors.

89. Sherman, A. 2003. *Conservation Finance e-Resources: A Compendium of Examples for Self-Sustaining Projects to Protect Wildlife and the Environment*. World Wildlife Fund-Center for Conservation Finance.

Geographic Coverage: Global

Environmental Asset and Type of Service: Various

Abstract / Summary

This is mainly a compilation of various conservation finance publications, descriptions and examples of actual applications of conservation finance techniques with links to relevant databases; websites are provided within this e-document. The document is organized into three main sections: (a) World Wide Fund conservation finance-related publications, (b) categorized summary of conservation finance techniques, and (c) links to other Conservation finance related databases.

90. Spergel, B. n.d. *Raising Revenues for Protected Areas: A Menu of Options*. Washington, D.C.: WWF Center for Conservation Finance.

Geographic Coverage:	Global
Environmental Asset and Type of Service:	Protected areas and national parks: watershed protection, biodiversity conservation, landscape/seascape, carbon sequestration
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various

Abstract / Summary:

This material describes more than 25 different ways of raising revenues for protected areas. It summarizes their relative advantages and disadvantages and lists sources to obtain more information. The various ways of financing protected areas fall under three basic categories: (a) annual budget allocations from government’s general revenues; (b) grants and donations from individuals, corporations, foundations, and international donor agencies; and (c) user fees, conservation taxes, fines and other revenues that are earmarked for funding protected areas.

91. Stoneham, G, Chaudhri, V, Ha, A. and L Strappazzon. 2002. *Auctions for Conservation Contracts: An Empirical Examination of Victoria’s Bush Tender Trial*. Australia: Department of Environment and Natural Resources and Melbourne Business School.

Geographic Coverage:	Australia
Environmental Asset and Type of Service:	Private lands: biodiversity conservation
Other Information:	<i>Buyer:</i> Department of Natural Resources and Environment-Victoria; <i>Sellers:</i> Landholders

Abstract:

This paper provides an analysis of an auction-based approach to allocating biodiversity conservation contracts on private land called the Bush Tender. The auction was conducted by the Department of Natural Resources and Environment in the Northeast and North Central regions of Victoria. The analysis was based on the key design features of the auction including auction format, contract specification and specification of biodiversity preferences. The bids provided by the landholders were then compared with a hypothetical fixed price scheme.

92. Suyanto, S, Leimona, B, Permana, R P and F J C Chandler. 2004. *Review of Developments of Environmental Services Markets in Indonesia. (Developing Mechanisms for Rewarding the Upland Poor in Asia for Environmental Services They Provide)*. World Agroforestry Centre (ICRAF), Indonesia.

Geographic Coverage:	Indonesia
Environmental Asset Type of Service:	Forests: biodiversity conservation, carbon sequestration, watershed protection and landscape/ seascape beauty
Other Information:	<i>Buyers:</i> Various; <i>Sellers:</i> Various

Abstract:

This study assessed the development of the market for environmental services in Indonesia. It identified the buyers and sellers of environmental services, the payment/rewards, mechanisms, intermediaries, transaction costs, and other actors. Moreover, it identified the stage of development of the environmental service markets. The review shows that the development of markets for environmental services in Indonesia is still nascent and that environmental service markets show varying levels of development. The market for landscape beauty is found to be relatively more progressive compared with other types of markets for environmental services.

93. Tipper, R. 2002. Helping Indigenous Farmers to Participate in the International Market for Carbon Services: The Case of Scolel Te. In: Pagiola, S, Bishop, J and N Landell-Mills (eds), *Selling Forest Environmental Services: Market-based Mechanisms for Conservation and Development*. Earthscan Publications Ltd. London. pp 223 – 233.

Geographic Coverage:	Mexico
Environmental Asset and Type of Service:	Forests: carbon sequestration
Other Information:	<p><i>Buyers:</i> International Automotive Federation (FIA), World Economic Forum, Pink Floyd, Future Forests; <i>Sellers:</i> small farmers and communities; <i>Broker:</i> Fondo BioClimatico, a trust fund; <i>Amount Paid and Payment Arrangements:</i> US\$8/tC goes directly to farmers, from a sale price of US\$12/tC; <i>Year Payments Started:</i> Exact year not indicated but could be late 1990s</p>

Abstract/Summary:

Discussions on the potential role of forests in carbon services have tended to focus on large-scale forest industry projects, with relatively little attention to the potential role of small farmers. These could neglect small farmers' contribution to address a global problem while cutting them out from a potential source of additional income. However, involving this group in an emerging international market for carbon services is not an easy task. This paper examines the Scolel Te Project in Mexico. This project is one of the first projects to involve small farmers as potential carbon service providers. The project is oriented towards packaging and marketing of carbon benefits from land-use activities that communities and individuals are seeking to implement. The project has been quite successful in implementing a carbon trading scheme from international buyers benefiting small farmers and communities.

94. Tolosa, M and J Padilla. 2005. *Estimating the Recreational Value of Whale Sharks in Donsol, Sorsogon. Philippines: WWF, unpublished report.*

Geographic Coverage:	Sorsogon, Philippines
Environmental Asset and Type of Service:	Whale sharks; marine ecotourism and biodiversity
Other Information:	<p><i>Buyers:</i> whale shark visitors; <i>Sellers:</i> local community; LGU of Donsol; <i>Broker:</i> WWF- Philippines</p>

Abstract / Summary:

Whale sharks, locally known as *butanding*, are the largest living sharks in the world. These animals are found in various locations throughout the world's oceans at different times of the year. But nowhere else have these animals been sighted in larger groups than in the waters of Donsol, Sorsogon, from December to May.

This study estimates the recreational value of whale shark ecotourism and identifies its composition. It also assesses the satisfaction of visitors with current level of man-made and natural services in the area. Moreover, it estimates the additional amount that visitors are willing to pay for the conservation of whale sharks and their habitats based on economic principles and statistical methods. Finally, it provides the visitors' preferred types of financing mechanisms and ways to improve the operation and management of whale shark ecotourism.

95. Tongson, E and M. Dygico. 2004. *User Fee System for Marine Ecotourism: The Tubbataha Reef Experience*. Coastal Management, 32: 17-23.

Geographic Coverage:	Palawan, Philippines
Environmental Asset and Type of Service:	Coral Reefs: marine ecotourism and biodiversity
Other Information:	<i>Buyers:</i> park visitors; <i>Seller:</i> Government; Tubbataha Protected Area Management Board

Abstract/Summary:

The Tubattaha Reefs Natural Park, a UNESCO World Heritage Site in the Sulu Sea, Philippines, is an offshore marine protected area well-known throughout the scuba diving community for its coral reefs and marine diversity. To address the perennial problem of park financing, Tubbataha Protected Area Management Board developed a fee collection and permit system in cooperation with the diving community. A willingness-to-pay survey conducted among divers in 1999 showed that the average diver is willing to pay US\$0.41 per visit. Using these results, a two-tiered pricing scheme was developed for foreign and local divers. After two years of fee collection, the total fee collected amounted to US\$65,000, which covered 28 per cent of the annual recurring costs and nearly 41 per cent of the core costs to protect Tubbataha. The experience shows the contribution of willingness-to-pay surveys in instituting user fees for long-term sustainable financing.

96. Tongson, E. 2005. Payments for Landscape/ Seascape Beauty. 2005. In: Padilla, J E, Tongson, E and R Lasco (eds), PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp. 62-73.

Geographic Coverage:	Philippines
Environmental Asset and Type of Service:	Forests, coastal and marine resources: landscape and seascape beauty
Other Information:	<i>Buyers:</i> tourists, institutional buyers and aid agencies; <i>Sellers:</i> landowners, lessees, concessionaires, real estate developers, peoples organizations, cooperatives and other tenured entities and the Department of Environment and Natural Resources, <i>Intermediaries:</i> our companies, agents, lessees, concessionaires,

middlemen, resort operators, time-sharers; *Brokers*: non-government organizations (e.g. World Wide Fund-Philippines), etc.

Summary/ Abstract:

Payments for landscape and seascape beauty are becoming popular mechanisms to generate innovative funding for parks and other areas known for natural beauty as government budgets are perennially inadequate, and non-government organization support is short-lived and time bound. To generate financing, governments are beginning to sell area services to different buyers. Willingness-to-pay surveys are increasingly conducted to approximate consumer surpluses and optimize revenues. Moreover, trust funds and local management boards are being set up to capture monetary payments, to manage and earmark these funds for operation and maintenance. Policy incongruence, conflicts and overlaps impede the implementation of environmental payments in the country.

97. Tongson, E. 2005. Payments for Seascape Beauty: The Case of Tubbataha Reef National Marine Park. In: Padilla, J E, Tongson, E and R Lasco (eds), PES: Sustainable Financing for Conservation and Development: Proceedings from the National Workshop on Payments for Environmental Services: Direct Incentives for Biodiversity Conservation and Poverty Alleviation, Manila, March 1-2 2005, WWF, ICRAF, REECS, UP-CIDS, UPLB-ENFOR, CARE. pp. 133-143.

Geographic Coverage: Philippines

Environmental Asset and Type of Service: Coral reefs: seascape beauty and marine biodiversity

Other Information: *Buyers*: SCUBA divers, foreign donors such as Global Environment Facility through the United Nations Development Programme, Packard Foundation, Japan International Cooperation Agency, Marine Parks Center of Japan, local and international conservation organizations, and the United Nations Education, Science and Cultural Organization., Philippine Navy *Seller*: Tubbataha Protected Area Management Board; *Broker*: WWF-Philippines

Summary/ Abstract:

The Tubbataha Reefs National Marine Park, a world heritage site, contributes to fisheries and ecotourism. Research reveals that reef preservation yields high economic returns. The Tubbataha Protected Area Management Board, however, is faced with a challenge on how to translate these into tangible financial returns considering that funds from government coffers are perennially inadequate and non-government organization funding is limited, project-driven and short-term. Because the park carries world heritage status and is visited by local and foreign divers, there is an opportunity to generate independent funding through user fees. The establishment of the area as marine-protected and the institutionalization of a user-fee scheme have resulted in positive environmental and economic effects. Fish productivity has been restored with the establishment of the marine-protected area, inspiring the local government of Cagayancillo to establish five additional marine protected areas. Additionally, proceeds from the fees along with grant payments from outside donors have supplemented the park's budget for maintenance and operation and have supported local livelihoods. The experience of Tubbataha highlights the importance of generating stakeholders' agreements based on benefit-sharing as a platform for future conservation initiatives.

98. Trieu Van Hung. 2004. The Role of Forestry in Poverty Reduction, Biodiversity Conservation and Clean Development Mechanism (CDM) in Viet Nam. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea,

Geographic Coverage: Vietnam

Environmental Asset and Type of Service: Forests: carbon sequestration and biodiversity conservation

Abstract:

The share of the forestry sector in the national economy of Vietnam is not high and its trend is declining. However, it plays an important role in the lives of more than 24 million people living in or around the forests, particularly the 8.5 million ethnic minorities. Non-timber forest products create economic opportunities for rural households in high mountainous and remote areas. The Forest Science Institute of Viet Nam is strengthening its capability in research and development, focusing not only on wood production, but also on stable/reasonable use of forest resources, biodiversity conservation, and application of CDM.

99. UNEP. 1999. *Environmental Impacts of Trade Liberalization and Policies for the Sustainable Management of Natural Resources: A Case Study on Romania's Water Sector*. UNEP-New York and Geneva.

Geographic Coverage: Romania

Environmental Asset and Type of Service: Water resources (inland rivers, lakes and reservoirs: Danube River and groundwater resources) - raw water

Other Information: *Buyers:* Various; *Sellers:* Company Apele Romane

Abstract:

This paper begins by discussing the impacts of economic reforms in Romania. It proceeds to analyse various existing and new economic instruments for the water sector. This paper proceeds by presenting an overview of the country's water sector and explores user-specific problems, increasing costs in a new pricing and tariff system. The new water pricing policy by the Company Apele Romane is also substantially discussed. The results of the new pricing policy by the company were compared with the drinking water services tariffs in the municipality of Satu Mare.

100. UNEP. 2004. *Economic Instruments in Biodiversity-related Multilateral Agreements*. UNEP Publication. Geneva.

Geographic Coverage: Global

Environmental Asset and Type of Service: Forests, wetlands and marine resources: mainly biodiversity conservation but touches other ecosystem services such as carbon sequestration, ecotourism services, etc.

Other Information: *Buyers:* Various; *Sellers:* Various

Abstract:

This paper reviews and discusses the use of economic instruments in the context of three biodiversity-related multilateral environmental agreements, which include the Convention on Biological Diversity, the Convention

on International Trade in Endangered Species of Wild Fauna and Flora, and the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention). It explores the kinds of economic measures that have been taken to confront biodiversity loss in various countries in their initiatives to implement the obligations and objectives of biodiversity-related multi-lateral environmental agreements. These instruments include property rights, market creation and enhancement, charges, fiscal instruments, financial assistance, liability systems and environmental funds. Furthermore, it identifies opportunities for the conventions to strengthen cooperation and build synergies in areas of commonality. This paper particularly examines how the work of biodiversity-related MEAs can contribute to strengthening the use of economic instruments to protect biodiversity at the national level.

101. Veríssimo, A, Alves, Y L B, da Costa, M P, De Carvalho, C R, Born, G C C, Talocchi, S and R H Born. 2002. *Payments for Environmental Services: Brazil*. FORD Foundation and Fundación PRISMA.

Geographic Coverage: Brazil

Environmental Asset and Type of Service: Forests: various

Other Information: *Buyers: Various; Sellers: Various*

Abstract:

This paper presents the findings of the second stage of Compensation for Environmental Services Project, carried out in Brazil from May to September 2001. The principal objective of the project was to assess the extent and under what conditions rural communities could benefit from environmental services provided by their territories. This paper analyses four case studies of compensation for environmental services in Brazil. These include: (1) Subsidy to Rubber-Tappers in the State of Acre Imazon Study, (2) Actors and Development in the Municipality of Gurupa and the Challenges of CES-FASE Study, (3) Populations and Environmental Services in Fully Protected Conservation Areas — the Case of Jau National Park — FVA Study, and (4) Conservation, Development and Environmental Services in the Area of the Mata Atlantica — The Case of Vale Do Rebeira — Vitae Civilis Study.

102. Wunder, S. 2005. *Payments for Environmental Services: Some Nuts and Bolts*. Center for International Forestry Research, Indonesia.

Geographic Coverage: Mainly Latin America and Asia

Environmental Asset and Type of Service: Forests: watershed protection, biodiversity conservation, carbon sequestration and landscape beauty

Other Information: *Buyers: Various; Sellers: Various*

Abstract:

Payments for environmental services have been developed and institutionalized in the tropics, but many field practitioners and prospective service buyers and sellers remain skeptical about the concept. This paper aims to help non-economists better understand the concept by providing practical “how-to” hints for payments for environmental services design. The assessment provided by this paper is based on literature review with field observations from research in Latin America and Asia. It concludes that service users will support payments for environmental services schemes; however, their willingness to pay will only increase if such schemes can clearly demonstrate additionality vis-à-vis carefully established baselines, if trust-building processes with service

providers are sustained, and payments for environmental services recipients' livelihood dynamics are better understood. payments for environmental services, as a conservation approach, can benefit buyers, sellers, and improve the resource base, but it is unlikely to completely outstrip other conservation instruments.

103. Yeo-Chang Youn and Jaekyong Chun. 2004. Inter-regional Partnership for Watershed Conservation in Korea. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea,

Geographic Coverage:	South Korea
Environmental Asset and Type of Service:	Forests: watershed protection
Other Information:	<i>Buyers:</i> Water consumers in Seoul Metropolitan; <i>Seller:</i> Upper region residents (farmers, forest owners, tourism industry)

Abstract:
Conflicts of interest often arise in the conservation and use of natural resources. This paper investigates the case of the conservation of Han River, which provides water to Metropolitan Seoul. It identifies the important factors for successful implementation of land-use policy for watershed conservation. It asserts that the watershed conservation policy is a result of a series of negotiations between representatives of downstream and upper region residents. The new policy introduced an instrument for internalization of externalities from watershed conservation, based on the concept of environmental justice among the stakeholders. Moreover, it says that the conflicts of interest among the stakeholders can be resolved through the establishment of a partnership among themselves, with the assistance of governmental and non-governmental agencies. Finally, the paper emphasizes that the effectiveness of the policy instrument is determined not only by the participation of the stakeholders, but also by a sound understanding of facts. The lack of this makes it difficult for the water users to pay for the watershed conservation.

104. Zoumin, S. 2004. Biodiversity Resources, Economic Values and Conservation in China. In: Sim, H C, Appanah, S and Y C Youn (eds), *Proceedings of the Workshop-Forests for Poverty Reduction: Opportunities with Clean Development Mechanism, Environmental Services and Biodiversity*. RAP Publications, South Korea, pp. 121-125.

Geographic Coverage:	China
Environmental Asset and Type of Service:	Forests: biodiversity conservation
Other Information:	No specific buyer and seller

Abstract:
This paper briefly discusses the characteristics of biodiversity resources in China at the gene, species and ecosystem levels. It then proceeds to discuss direct utilization, indirect utilization and potential utilization values of biodiversity resources in China. It contends that the historical, present and future economic values of biodiversity resources play an important role in poverty reduction, especially in rural areas of China. Measures that have been adopted for biodiversity resources conservation are reviewed in terms of law and policy, management, conservation and sustainable utilization, scientific research and international cooperation.

105. _____ 2002. Investigating New Approaches: A Review of Natural Resource Management Pilots and Programs in Australia that Use Market-based Instruments. Australia: A Joint Initiative of all States Territories and the Commonwealth under the National Action Plan on Salinity and Water Quality.

Geographic Coverage:	Australia
Environmental Asset and Type of Service:	Forests and wetlands: biodiversity conservation, salinity reduction, wetland rehabilitation, water allocation
Other Information:	<i>Buyers: Various; Sellers: Various</i>

Abstract:

This paper is a review of current conceptual work, pilot schemes and market-based instruments programmes being undertaken in Australia. Twenty-four programmes were surveyed regarding the market failures being addressed, market mechanisms being used, commodity definition, details of buyers and sellers, impediments faced, and their transferability to other environments or locations. The survey focused on the way in which the programmes conceptualize and deal with the elements of market-based instruments, possible extensions to existing market-based instruments pilots, and their potential applicability to new situations either through new locations or new components of the environment. The paper shows that market-based instruments are being used to address a range of natural resource issues, including conserving biodiversity, reducing salinity, rehabilitating wetlands, allocating water within environmental limits, and reducing in stream nutrient levels. It has established that, in many cases, existing pilot project concepts are transferable to both different locations and different types of natural resources or pollutants. There are three areas that now offer potentials for improved environmental policy design. These are “cap and trade” schemes, auctions for the purchase of environmental services, and strategic information disclosure (e.g. ecolabeling). There is still a lot to be learnt. Importantly, market-based instruments are generally being viewed as one aspect of the policy armoury worthy of further investigation and refinement, rather than a complete substitute for existing approaches. Indeed, in most cases, market-based instruments require a regulatory framework to operate. A key challenge is to discover more about the range of circumstances under which market-based instruments can successfully be applied.



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PROGRAM

Day 1 — 01 March 2005

8:30 – 9:00	Registration	
9:00 – 9:10	Opening and Introductions	Dr Jose Padilla
9:10 – 9:20	Welcome Remarks	Engr Edgardo Tongson <i>WWF</i> Dr Rodel Lasco <i>ICRAF</i>
9:20 – 9:30	Keynote Speech	Hon. Ramon Paje <i>Undersecretary, DENR</i>
	CONCEPTS AND APPLICATIONS	
9:30 – 9:45	Payments for Environmental Services (PES): Overview and Applications	Dr Herminia Francisco <i>REECS</i>
9:45 – 10:00 P	Payments for Watershed Services: Concepts and Applications	Dr Germelino Bautista <i>REECS</i>
10:00 – 10:15 P	Payments for Carbon Sequestration: Concepts and Applications	Dr Rodel Lasco
10:15 – 10:30	Payments for Biodiversity Conservation: Concepts and Applications	Dr Perry Ong <i>UP-CIDS</i>
10:30 – 10:45	Payments for Landscape and Seascape Beauty: Concepts and Applications	Engr Edgardo Tongson
10:45 – 11:00	RUPES Framework and its Applications through Action Research	Ms Leimona Beria <i>RUPES, ICRAF</i>
11:00 – 11:15	Legal, Policy and Institutional Framework for PES in the Philippines: Opportunities and Challenges	Dr Rowena Boquiren <i>UP Baguio</i>
11:15 – 12:00	Open Forum	Dr Jose Padilla
12:00 – 1:00 L	UNCH	

	CASE STUDIES	
1:00 – 1:20	Watershed Services: The Maasin Watershed Experience	Dr Jessica Salas <i>Philippine Watershed Management Coalition</i>
1:20 – 1:40	Carbon Sequestration: Potential Projects in the Philippines	Dr Rodel Lasco
1:40 – 2:00 E	Ecotourism: Tubbataha Reef National Marine Park	Engr Edgardo Tongson
2:00 – 2:20	Biodiversity: Natural Products Research and (Marine) Bioprospecting	Dr Lourdes Cruz <i>UP-Marine Science Institute</i>
2:20 – 2:40	Open Forum	Dr Jose Padilla
2:40 – 3:00	Private Sector Perspectives: Domestic Water Provider	Mr Alejo Roxas, Jr <i>Zamboanga City Water District</i>
C	OFFEE BREAK	
3:20 – 3:40	An Introduction to the Clean Development Mechanism	Ms Angelita Ramos <i>CDM Consultant</i>
3:40 – 4:00	Private Sector Perspectives: Asian Conservation Company and Investment in Ten Knots Group/El Nido Resorts	Ms Leigh Perez <i>Asian Conservation Company (ACC)</i>
4:00 – 4:20	The GEF as a Buyer of Environmental Services: UNDP-GEF Small Grants Program	Ms Angie Cunanan <i>GEF - UNDP</i>
4:20 – 5:00	Open Forum	Dr Jose Padilla
6:30 W	ELCOME DINNER	

Day 2 — 02 March 2005

9:00 – 9:15	Recap of Discussions on the First Day	Dr Jose Padilla
9: 10 – 9:15	<p>WORKSHOPS</p> <p>Instructions for Simultaneous Workshops (Grouping is by Environmental Service: Watershed Services; Carbon Sequestration; Landscape/Seascape Beauty; Biodiversity Conservation)</p> <p>Each group will respond to the following questions, focusing on the assigned environmental service:</p> <p>a) What are the opportunities, issues and challenges for PES work in the Philippines</p> <p>b) What are the strategies for addressing the issues and challenges identified in question a?</p> <p>c) What are the criteria in selecting sites to implement PES in the Philippines?</p> <p>d) Based on the above criteria, what are the potential PES sites in the Philippines?</p>	Dr Jose Padilla
9:15 – 12:00 C	Conduct of Workshop and Preparation of Presentation Materials	
12:00 - 1:30	LUNCH BREAK	
1:30 – 3:30 B	Presentation of Workshop Outputs and Open Forum BREAK	Group Reports
4:00 – 4:15	Synthesis	Dr Jose Padilla
4:15 – 5:15	Next Steps Feedback from Participants Presentation of Certificates of Appreciation	Dr Jose Padilla Dr Rodel Lasco Engr Edgardo Tongson
5:15 – 5:30	Closing	Dr Rodel Lasco Engr Edgardo Tongson

ABOUT THE AUTHORS

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ACRONYMS AND ABBREVIATIONS

ACC	Asian Conservation Company
ADB	Asian Development Bank
AFP	Armed Forces of the Philippines
ARA	Academic Research Agreements
ASEAN	Association of South East Asian Nations
ASOMPS	Asian Symposium on Medicinal Plants, Spices and Other Natural Products
AWP	Annual Work Plan
BAU	Business-as-Usual
BCISTI	Bataan Center for Innovative Science and Technology Inc.
BK	<i>Bayad Kalikasan</i>
BNP	Bataan National Park
BU	Bioprospecting Undertaking
BWD	Baguio Water District
CADC	Certificate of Ancestral Domain Claim
CADT	Certificate of Ancestral Domain Title
CARE	Cooperative Assistance and Relief Everywhere
CBD	Convention on Biological Diversity
CBFM	Community-Based Forest Management
CBFMA	Community-Based Forest Management Agreement
CBMSF	Center for BioMolecular Science Foundation
CDCF	Community Development Carbon Fund
CDM	Clean Development Mechanism
CERs	Certified Emissions Reductions
CI	Conservation International
CIFOR	Center for International Forestry Research
CITES	Convention on International Trade in Endangered Species
CO	Community Organizing
COP	Conference of the Parties
CRA	Commercial Research Agreements
CSOs	Civil Society Organizations
CSR	Corporate Social Responsibility
CVM	Contingent Valuation Method
CWTS	Civic Welfare Training Service
DA	Department of Agriculture
DAO	Department Administrative Order
DAR	Department of Agrarian Reform
DENR	Department of Environment and Natural Resources
DNA	Designated National Authority
DOE	Department of Energy
DOEs	Designated Operational Entities
DOST	Department of Science and Technology
DOT	Department of Tourism
EC	European Community
ECC	Environmental Compliance Certificate
EDC	Energy Development Corporation
EGF	Environmental Guarantee Fund
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMO	El Nido Media Organization

ENF	El Nido Foundation
ENFOR	Environmental Forestry Programme
ENR	El Nido Resorts
ENRO	Environment and Natural Resources Office
EO	Executive Order
EP	Environmental Products
EPIRA	Electric Power Industry Reform Act
ERC	Energy Regulatory Commission
ERPA	Emission Reduction Purchase Agreement
ERU	Emission Reduction Unit
ES	Environmental Service
ESP	Environmental Service Payments
EU	European Union
FAO	Food and Agriculture Organization
FGDs	Focus Group Discussions
FHM	Four Helix Model
FMB	Forest Management Bureau
FONAFIFO	Fondo Nacional de Financiamiento Forestal
FPIC	Free and Prior Informed Consent
FSMS	Forest Stocks Monitoring System
GEF	Global Environmental Facility
GHGs	Greenhouse Gases
GIS	Geographic Information System
GISTDA	Geo-Informatics and Space Technology Development Agency
GMO	Genetically Modified Organisms
GRBS	Game Refuge & Pond Sanctuaries
GWP	Global Warming Potential
HB	House Bill
IACBGR	Inter-Agency Committee on Bio-Genetic Resources
IACCC	Inter-Agency Committee on Climate Change
ICBG	International Cooperative Biodiversity Groups
ICDP	Integrated Conservation and Development Program
ICRAF	International Center for Research in Agro Forestry
IEC	Information, Education and Communication
IFAD	International Fund for Agricultural Development
ILO	Irrigation Service Fees
IMWW	Iloilo Metropolitan Waterworks
IP	Indigenous Peoples
IPAF	Integrated Protected Area Fund
IPCC	Intergovernmental Panel on Climate Change
IPRA	Indigenous Peoples' Rights Act
IRR	Implementing Rules and Regulations
ISF	Irrigation Service Fees
ITI	Island Transvoyager Inc.
IUCN	International Union for the Conservation of Nature
IWMC	Iloilo Watershed Management Council
JBIC	Japan Bank for International Cooperation
JCF	Japan Carbon Fund
JI	Joint Implementation
JICA	Japan International Cooperation Agency

KEF	Kalahan Educational Foundation
KII	Key Informant Interview
KFR	Kalahan Forest Reserve
LFG	Landfill Gas
LGU	Local Government Unit
LISCOP	Laguna de Bay Institutional Strengthening and Community Participation Project
LLDA	Laguna Lake Development Authority
LULUCF	Land Use and Land Use Change, Forestry
MBIs	Market Based Instruments
MCA	Multi-Criteria Analysis
MEC	Marginal External Cost
MES	Markets for Environmental Services
MIWD	Metro Iloilo Water District
MNP	Mariveles National Park
MOA	Memorandum of Agreement
MOT	Municipality of Tanay
MPA	Marine Protected Area
MPC	Marginal Private Cost
MRP	Marginal Revenue Product
MS	Master of Science
MSU	Michigan State University
MUC	Marginal User Cost
MVP	Monitoring and Verification Plan
MWSS	Metropolitan Waterworks and Sewerage System
NAWASA	National Waterworks and Sewerage Authority
NCIP	National Commission on Indigenous Peoples
NEA	National Electrification Administration
NEDA	National Economic Development Authority
NGO	Non-government Organization
NIA	National Irrigation Administration
NIPAS	National Integrated Protected Area System
NIS	National Irrigation System
NPC	National Power Corporation
NPR	Natural Products Research
NRCP	National Research Council of the Philippines
NSMNP	Northern Sierra Madre Natural Park
NSO	National Statistics Office
NTFP	Non-timber Forest Products
NWRB	National Water Resources Board
NY	New York
ODA	Official Development Assistance
OE	Operating Entities
OECD	Organization for Economic Cooperation and Development
PA	Protected Area
PATA	Pacific Asia Travel Association
PAMB	Protected Area Management Board
PCF	Prototype Carbon Fund
PCG	Philippine Coast Guard
PCSD	Palawan Council for Sustainable Development
PDD	Project Design Document

PENRO	Environment and Natural Resources Office
PES	Payments for Environmental Services
PIETA	Power Industry Environmental Trust Account
PNOC-EC	Philippine National Power Corporation- Exploration Corporation
POs	Peoples Organizations
PPL	Peñablanca Protected Landscape
PSCs	Public Service Contractors
PTA	Philippine Tourism Authority
RA	Republic Act
RABA	Rapid Agrobiodiversity Assessment
R&D	Research and Development
REA	Regional Environmental Authority
REECs	Resources, Environment and Economics Center for Studies, Inc.
RUP	Resource Use Permits
RUPES	Rewarding Upland Poor for Environmental Services
RWMHEEF	Reforestation, Watershed Management, Health and/or Environment Enhancement Fund
SEP	Strategic Environmental Plan
SIFMA	Socialized Industrial Forest Management Agreement
SNRM	Sustainable Natural Resource Management
STARFRIA	Sta. Barbara River Federation of Irrigators Association
TAR	Third Assessment Report
TERPA	Total Emissions Reduction Purchase Agreement
THM	Triple Helix Model
TKG	Ten Knots Group
TMO	Tubbataha Management Office
TPAMB	Tubbataha Protected Area Management Board
TRNMP	Tubbataha Reef National Marine Park
TAWMB	Tigum Aganan Watershed Management Board
UK	United Kingdom
UNFCCC	United Nations Framework Convention on Climate Change
UNDP-GEF	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Education, Science and Cultural Organization
UP-CIDS	University of the Philippines Center for Integrative and Development Studies
UPLB	University of the Philippines at Los Banos
UP-MSI	University of the Philippines- Marine Science Institute
US	United States
USAID	United States Agency for International Development
USNIH-ICBG	United States National Institute of Health—International Cooperative Biodiversity Groups
USLE	Universal Soil Loss Equation
USNIH	United States National Institute of Health
WB	World Bank
WWF	World Wide Fund for Nature
WTP	Willingness-to-Pay
ZCWD	Zamboanga City Water District



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