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Glossary of terms

Agricultural biodiversity

Agricultural biodiversity is a broad term that includes all components of biological diversity of relevance to food and agriculture and all components of biological diversity that constitute the agro-ecosystem: the variety and variability of animals, plants and micro-organisms, at the genetic, species and ecosystem levels, that are necessary to sustain key functions of the agro-ecosystem, its structure and processes.

Biological diversity

The variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, among species and of ecosystems.

Buyer (of an environmental service)

An individual or group who would be positively affected by more of the service and therefore willing to provide some financial incentive for its provision.

Carbon sequestration

Storage of carbon for an extended period in a chemical form that does not contribute to global warming. The most common methods of carbon sequestration are above- and below-ground additions to biomass, additions to soil organic carbon and additions to stocks of inorganic carbon compounds that do not break down easily (e.g. calcium carbonate).

Direct use value

The value derived from marketed goods and services, normally involving private benefits.

Ecosystem

A dynamic complex of plant, animal, and micro-organism communities and the non-living environment interacting as a functional unit.

Ecosystem services

The benefits people obtain from ecosystems.

Ecosystem externality

An uncompensated provision of an ecosystem service (positive externality) or an unpenalized negative effect on the delivery of ecosystem services (negative externality). See *also* **environmental services**.

Environmental services

The subset of ecosystem services characterized by externalities.

Existence value

The benefits people obtain from knowing that an ecosystem service exists, even if they will never actually use the service themselves. *Also referred to as* **non-use value**.

Farmer

All producers of agricultural products, including crops, livestock, fish, and forest products.

Indirect use value

The benefit that people derive indirectly from services such as watershed protection, carbon sequestration, and biodiversity conservation.

Non-use value

The benefits people obtain from knowing that an ecosystem service exists, even if they will never actually use the service themselves. *Also referred to as **existence value**.*

Opportunity cost

The benefits that producers would have to forgo in order to change their practices, for example in order to provide an environmental service.

Option value

The value associated with preserving a future possibility for using an ecosystem service.

Payments for environmental services

Voluntary cash transfers between buyers and sellers for the provision of an environmental service.

Public good

A good whose use by one person does not affect its use by another person and for which it is not possible to exclude users.

Seller (of an environmental service)

An individual or group who could modify their practices to provide more of the environmental service. This report focuses on farmers.

Use value

The sum of **direct use value** and **indirect use value**.

References

- Adger, W.N., Brown, K., Cervigni, R. & Moran, D.** 1995. Total economic value of forests in Mexico. *Ambio*, 24(5): 286–296.
- Agarwal, A. & Narain, S.** 2000. *Redressing ecological poverty through participatory democracy: case studies from India*. Working Paper Series No. 36. Amherst, MA, USA, Political Economy Research Institute (PERI), University of Massachusetts.
- Alix-Garcia, J., de Janvry, A. & Sadoulet, E.** 2005. A tale of two communities: explaining deforestation in Mexico. *World Development*, 33(2): 219–235.
- Alix-Garcia, J., de Janvry, A. & Sadoulet, E.** Forthcoming. The role of deforestation risk and calibrated compensation in designing payments for environmental services. *Environment and Development Economics*.
- Alrusheidat, J.** 2004. Preventing environmental problems in the arid and semi-arid zones – environmental education is what we need. *New Medit*, 3(3): 50–54.
- Amacher, G.S. & Feather, P.M.** 1997. Testing producer perceptions of jointly beneficial best management practices for improved water quality. *Applied Economics*, 29(2): 153–159.
- Andersen, L.E.** 1997. *A cost-benefit analysis of deforestation in the Brazilian Amazon*. Discussion Paper 455. Rio de Janeiro, Brazil, Research Institute for Applied Economics (IPEA).
- Antle, J.M. & Valdivia, R.O.** 2006. Modelling the supply of ecosystem services from agriculture: a minimum-data approach. *The Australian Journal of Agricultural and Resource Economics*, 50(1): 1–15.
- ASB (Alternatives to Slash and Burn Programme).** 2001. *The Krui agroforests: a model of sustainable community-based management*. Policy Brief No. 2. Nairobi.
- Ayres, W.S. & Dixon, J.A.** 1995. *Economic and ecological benefits of reducing emissions of sulfur oxides in the Sostanj region of Slovenia*. Environment Department Paper No. 009. Washington, DC, World Bank.
- Baidu-Forson, J.** 1999. Factors influencing adoption of land-enhancing technology in the Sahel: lessons from a case study in Niger. *Agricultural Economics*, 20(3): 231–239.
- Barbier, E.B.** 1989. *Economics, natural-resource scarcity and development: conventional and alternative views*. London, Earthscan.
- Baumert, K.A., Herzog, T. & Pershing, J.** 2005. *Navigating the numbers: greenhouse gas data and international climate policy*. Washington, DC, World Resources Institute.
- Bayon, R., Hawn, A. & Hamilton, K.** 2007. *Voluntary carbon markets: an international business guide to what they are and how they work*. London, Earthscan.
- Bennett, M.T. & Xu, J.** 2005. *China's Sloping Land Conversion Program: institutional innovation or business as usual?* Paper presented at the ZEF/CIFOR Workshop on Payments for Environmental Services (PES): Methods and Design in Developing and Developed Countries, 15–18 June 2005, Titisee, Germany.
- Biesmeijer, J.C., Roberts, S.P.M., Reemer, M., Ohlemüller, R., Edwards, M., Peeters, T., Schaffers, A.P., Potts, S.G., Kleukers, R., Thomas, C.D., Settele, J. & Kunin, W.E.** 2006. Parallel declines in pollinators and insect-pollinated plants in Britain and the Netherlands. *Science*, 313: 351–354.
- Bioversity International.** 2006. *Developing a global approach to study markets for agricultural biodiversity products*. Paper presented at the World Congress on Communications for Development, 25–27 October 2006. Rome (Unpublished)
- Boutayeb, A. & Boutayeb, S.** 2005. The burden of non communicable diseases in developing countries. *International Journal for Equity in Health*, 4:2.
- Bromley, D.** 1998. Property regimes in economic development: lessons and policy implications. In E. Lutz, ed. *Agriculture and the environment: perspectives on sustainable rural development*, pp. 83–91. Washington, DC, World Bank.
- Bruijnzeel, L.A.** 2004. Hydrological functions of tropical forests: not seeing the soil for the trees? *Agriculture, Ecosystems and Environment*, 104(1): 185–228.
- Buchanan, J.M. & Tullock, G.** 1975. Polluters' profits and political response: direct controls versus taxes. *American Economic Review*, 65(March): 139–147.
- BWI (Biodiversity and Wine Initiative).** 2007. Web site (available at <http://www.bwi.co.za/>).
- Caldés, N., Coady, D. & Maluccio, J.A.** 2006. The cost of poverty alleviation transfer programs: a comparative analysis of three programs in Latin America. *World Development*, 34(5): 818–837.

- CBD (Convention on Biological Diversity).** 1993. *Convention on Biological Diversity*. Text concluded at Rio de Janeiro on 5 June 1992. United Nations Treaty Series. New York, USA, United Nations.
- CBD.** 2000. *Agricultural biological diversity: review of phase I of the programme of work and adoption of a multi-year work programme*. Fifth Ordinary Meeting of the Conference of the Parties to the Convention on Biological Diversity – COP V/5. 15–26 May 2000, Nairobi.
- CERES.** 2006. *Press Release. Dozens of new insurance products emerging to tackle climate change and rising weather losses*. Online press release (available at http://www.ceres.org/news/news_item.php?nid=221).
- Chomitz, K.M.** 2007. *At loggerheads? Agricultural expansion, poverty reduction, and environment in the tropical forests*. World Bank Policy Research Report. Washington, DC, World Bank.
- Claassen, R., Hansen, L., Peters, M., Breneman, V., Weinberg, M., Cattaneo, A., Feather, P., Gadsby, D., Hellerstein, D., Hopkins, J., Johnston, P., Morehart, M. & Smith, M.** 2001. *Agri-environmental policy at the crossroads: guideposts on a changing landscape*. Agricultural Economic Report No. 794. Washington, DC, Economic Research Service, United States Department of Agriculture.
- Coady, D., Grosh, M. & Hoddinott, J.** 2004. Targeting outcomes redux. *World Bank Research Observer*, 19(1): 61–85.
- Coase, R.** 1960. The problem of social cost. *Journal of Law and Economics*, 3(October): 1–44.
- Committee on the Status of Pollinators in North America.** 2007. *Status of pollinators in North America: executive summary*. Washington, DC, National Research Council.
- Comprehensive Assessment of Water Management in Agriculture.** 2007. *Water for food, water for life: a comprehensive assessment of water management in agriculture*. London, Earthscan and Colombo, International Water Management Institute.
- Cosbey, A., Murphy, D., Drexhage, J. & Balint, J.** 2006. *Making development work in the CDM: Phase II of the Development Dividend Project*. Winnipeg, Canada, International Institute for Sustainable Development.
- Cramb, R.A., Garcia, J.N.M., Gerrits, R.V., & Saguiguit, G.C.** 2000. Conservation farming projects in the Philippine uplands: rhetoric and reality. *World Development*, 28(5): 911–927.
- Dagang, A.B.K. & Nair, P.K.R.** 2003. Silvopastoral research and adoption in Central America: recent findings and recommendations for future directions. *Agroforestry Systems*, 59(2): 149–155.
- Dasgupta, P.** 1993. *An inquiry into well-being and destitution*. Oxford, UK, Oxford University Press.
- Dasgupta, P.** 1996. The economics of the environment. *Environment and Development Economics*, 1(4): 387–421.
- Dasgupta, S.** 1999. *Opportunities for improving environmental compliance in Mexico*. World Bank Policy Research Working Paper Series No. 2245. Washington, DC, World Bank.
- Dasgupta, P. & Maler, K.G.** 1995. Poverty, institutions and the environmental resource base. In J. Behrman & T.N. Srinivisan, eds. *Handbook of development economics*, Volume IIIB, Chapter 39. Part 8: Resources, technology, and institutions, pp. 2371–2463. Amsterdam, North-Holland Publishing.
- Davis, B.** 2003. Innovative policy instruments and evaluation in rural and agricultural development in Latin America and the Caribbean. In FAO. *Current and emerging issues for economic analysis and policy research (CUREMIS II). Volume I: Latin America and the Caribbean*, edited by B. Davis, Chapter 3, pp. 67–104. Rome.
- De Jong, B.H.J., Tipper, R. & Montoya-Gómez, G.** 2000. An economic analysis of the potential for carbon sequestration by forests: evidence from southern Mexico. *Ecological Economics*, 33(2): 313–327.
- de la Brière, B. & Rawlings, L.B.** 2006. *Examining conditional cash transfer programs: a role for increased social inclusion?* Social Protection Discussion Paper No. 0603. Washington, DC, World Bank.
- Deininger, K.** 1999. Making negotiated land reform work: initial experience from Colombia, Brazil, and South Africa. *World Development*, 27(4): 651–672.
- Dennis, P., Shellard, L.D.F. & Agnew, R.D.M.** 1996. Shifts in arthropod species assemblages in relation to silvopastoral establishment in upland pastures. *Agroforestry Forum*, 7(3): 14–21.
- Derpsch, R.** 2005. The extent of conservation agriculture adoption worldwide: implications and impact. In *Proceedings of the Third World Congress on Conservation Agriculture: Linking Production, Livelihoods and Conservation, Nairobi, Kenya, 3–7 October 2005* [CD-Rom]. Harare, African Conservation Tillage Network Productions.
- Diagana, B., Antle, J., Stoorvogel, J. & Gray, K.** 2007. Economic potential for soil carbon

- sequestration in the Niore Region of Senegal's Peanut Basin. *Agricultural Systems*, 94(1): 26–37.
- Dietz, T. & Stern, P.C.**, eds. 2002. *New tools for environmental protection: education, information and voluntary measures*. Washington, DC, The National Academies Press.
- Dixon, J. & Gulliver, A. with Gibbon, D.** 2001. *Farming systems and poverty: improving farmers' livelihoods in a changing world*, edited by M. Hall. Rome, FAO and Washington, DC, World Bank.
- Doak, C.M., Adair, L.S., Monteiro, C. & Popkin, B.M.** 2000. Overweight and underweight coexist within households in Brazil, China and Russia. *The Journal of Nutrition*, 130: 2965–2971.
- Dobbs, T.L. & Pretty, J.N.** 2004. Agri-environmental stewardship schemes and "Multifunctionality". *Review of Agricultural Economics*, 26(2): 220–237.
- Echavarría, M., Vogel, J., Albán, M. & Meneses, F.** 2004. *The impacts of payments for watershed services in Ecuador: emerging lessons from Pimampiro and Cuenca*. Markets for Environmental Services Series No. 4. London, International Institute for Environment and Development.
- Ecosystem Marketplace.** 2005. *Matrix of ecosystem service payments: today and in the future. Supplement 1 – ecosystem market matrix*. Report to UNDP/GEF on institutionalizing payments for ecosystem services. Washington, DC, Forest Trends (cited in FAO, 2007c).
- Ecosystem Marketplace.** 2007. Web site (available at <http://ecosystemmarketplace.com/index.php>).
- Fafchamps, M.** 1992. Cash crop production, food price volatility and rural market integration in the Third World. *American Journal of Agricultural Economics*, 74(1): 90–99.
- FAO.** N.d. *Afforestation and reforestation projects under the Clean Development Mechanism of the Kyoto Protocol*. Forest Resources Division fact sheet. Rome.
- FAO.** 1997. *The state of the world's plant genetic resources for food and agriculture*. Rome.
- FAO.** 1999. *Rural poverty, risk and development*, by M. Fafchamps. FAO Economic and Social Development Paper No. 144. Rome.
- FAO.** 2001. *Zero tillage development in tropical Brazil – The story of a successful NGO activity*, by J.N. Landers. FAO Agricultural Services Bulletin No. 147. Rome.
- FAO.** 2002a. *Cooperation between a small private hydropower producer and a conservation NGO for forest protection: the case of La Esperanza, Costa Rica*, by M. Rojas & B. Aylward. Land-Water Linkages in Rural Watersheds Case Study Series. Rome.
- FAO.** 2002b. *The State of Food and Agriculture 2002*. FAO Agriculture Series No. 34. Rome.
- FAO.** 2003a. *World agriculture: towards 2015/2030. An FAO perspective*, edited by J. Bruinsma. Rome, FAO and London, Earthscan.
- FAO.** 2003b. *Optimizing soil moisture for plant production – the significance for soil porosity*, by F. Shaxson & R. Barber. FAO Soils Bulletin 79. Rome.
- FAO.** 2003c. *Smallholder agroforestry projects: potential for carbon sequestration and poverty alleviation*, by O.J. Cacho, G.R. Marshall & M. Milne. ESA Working Paper No. 03-06. Rome.
- FAO.** 2003d. *Unlocking the water potential of agriculture*. Rome.
- FAO.** 2004a. *Carbon sequestration in dryland soils*. World Soil Resources Report No. 102. Rome.
- FAO.** 2004b. *Payment schemes for environmental services in watersheds*. Regional Forum, Arequipa, Peru, 9–12 June 2003. Land and Water Discussion Paper 3. Rome.
- FAO.** 2004c. *Valuation methods for environmental benefits in forestry and watershed investment projects*, by R. Cavatassi. ESA Working Paper No. 04-01. Rome.
- FAO.** 2004d. *The State of Agricultural Commodity Markets 2004*. Rome.
- FAO.** 2004e. *The market for non-traditional agricultural exports*. FAO Commodities and Trade Technical Paper No. 3. Rome.
- FAO.** 2005a. *The State of Food and Agriculture 2005: agricultural trade and poverty: can trade work for the poor?* FAO Agriculture Series No. 36. Rome.
- FAO.** 2005b. *An assessment of Mexico's Payment for Environmental Services Program – Mexico Country Case Study Report*, by J. Alix-García, A. de Janvry, E. Sadoulet, J.M. Torres, J. Braña & M.Z. Ramos. Roles of Agriculture Project (ROA), Environment Services. Rome.
- FAO.** 2005c. *The State of Food Insecurity in the World 2005*. Rome.
- FAO.** 2006a. *Livestock's long shadow: environmental issues and options*, by H. Steinfield, P. Gerber, T. Wassenaar, V. Castel, M. Rosales & C. de Haan. Livestock, Environment and Development Initiative. Rome.
- FAO.** 2006b. *Global Forest Resources Assessment 2005 – progress towards sustainable forest management*. FAO Forestry Paper No. 147. Rome.

- FAO 2006c.** *Using markets to promote the sustainable utilization of crop genetic resources.* Project funded by the FAO–Netherlands Partnership Programme. Draft project methodology. Unpublished. Rome.
- FAO. 2006d.** *Land tenure as an incentive for environmental service provision: lessons from Nepal and the Philippines*, by A. Agostini & L. Lipper. Unpublished research draft. Rome.
- FAO. 2006e.** *Putting payments for environmental services in the context of economic development*, by D. Zilberman, L. Lipper & N. McCarthy. ESA Working Paper No. 06-15. Rome.
- FAO. 2006f.** *Abatement and transaction costs of carbon-sink projects involving smallholders*, by O.J. Cacho & L. Lipper, ESA Working Paper No. 06-13. Rome.
- FAO. 2006g.** *Gender, the missing component of the response to climate change*. by Y. Lambrou & G. Piana. Rome.
- FAO. 2006h.** FAOSTAT statistical database. Rome (available at <http://faostat.fao.org>).
- FAO. 2006i.** *World agriculture: towards 2030/2050.* Interim report. Rome.
- FAO. 2006j.** *The State of Agricultural Commodity Markets 2006.* Rome.
- FAO. 2006k.** *Food Security Statistics.* FAOSTAT domain. Rome (available at http://www.fao.org/es/ess/faostat/foodsecurity/index_en.htm).
- FAO. 2006l.** *The State of Food Insecurity in the World 2006.* Rome.
- FAO. 2007a.** *The roles of agriculture in development: policy implications and guidance.* Research programme summary report 2007. Socio-economic analysis and policy implications of the roles of agriculture in developing countries, Roles of Agriculture Project Phase II. Rome.
- FAO. 2007b.** *Agriculture and water scarcity: a programmatic approach to water use efficiency and agricultural productivity.* Twentieth Session, Committee on Agriculture, COAG/2007/7. Rome.
- FAO. 2007c.** *Payments for ecosystem services: potential contributions to smallholder agriculture in developing countries*, by S. Scherr & J. Milder. SOFA 2007 background paper. Unpublished. Rome.
- FAO. 2007d.** *Who is buying ecosystem services?* by J. Salzman. SOFA 2007 background paper, Unpublished. Rome.
- FAO. 2007e.** *Agriculture and poverty reduction. Is agriculture still the key to rural development?*, by G. Anriquez & K. Stamoulis. ESA Working Paper No. 07-02.
- FAO. 2007f.** *Managing environmental services in agricultural landscapes and to reduce poverty: can PES programmes deliver environmental and poverty objectives?*, by E. Bulte, D. Zilberman, L. Lipper and R. Stringer. SOFA 2007 background paper. Unpublished. Rome.
- FAO/Forest Trends. 2007.** *Investing in the future: an assessment of private sector demand for engaging in markets & payments for ecosystem services*, by S. Waage, with contributions from I. Mulder, K. ten Kate, S. Sherr, J.P. Roberts, A. Hawn, K. Hamilton, R. Bayon and N. Carroll. Forthcoming in PESAL (Payments for Environmental Services from Agricultural Landscapes) Papers series. Rome, FAO and Washington, DC, Forest Trends.
- Fearnside, P.M. & Guimarães, W.M.** 1996. Carbon uptake by secondary forests in Brazilian Amazonia. *Forest Ecology and Management*, 80(1): 35–46.
- Feather, P. & Amacher, G.** 1994. Role of information in the adoption of best management practices for water quality improvement. *Agricultural Economics*, 11(2–3): 159–170.
- Ferraro, P.J.** 2001. Global habitat protection: limitations of development interventions and the role for conservation performance payments. *Conservation Biology*, 15(4): 990–1000.
- Fisher, M.J., Rao, I.M., Ayarza, M.A., Lascano, C.E., Sanz, J.I., Thomas, R.J. & Vera, R.R.** 1994. Carbon storage by introduced deep-rooted grasses in the South American savannas. *Nature*, 371(6494): 236–238.
- Fischer, G., Shah, M., Tubiello, F.N. & van Velhuizen, H.** 2005. Socio-economic and climate change impacts on agriculture: an integrated assessment, 1990–2080. *Philosophical Transactions of the Royal Society B*, 360: 2067–2083.
- Foley, J.A., DeFries, R., Asner, G.P., Barford, C., Bonan, G., Carpenter, S.R., Chapin, F.S., Coe, M.T., Daily, G.C., Gibbs, H.K., Helkowski, J.H., Holloway, T., Howard, E.A., Kucharik, C.J., Monfreda, C., Patz, J.A., Prentice, I.C., Ramankutty, N. & Snyder, P.K.** 2005. Global consequences of land use. *Science*, 309(5734): 570–574.
- FONAFIFO (Fondo Nacional de Financiamiento Forestal).** 2005. *The Environmental Services Program: a success story of sustainable development implementation in Costa Rica. FONAFIFO, over a decade of action*, edited by J.M. Rodríguez. San José.
- GEF (Global Environment Facility).** 2007a. Ethiopia – a dynamic farmer-based approach to the

- conservation of African plant genetic resources. Project Web page (available at <http://www.gefonline.org/projectDetails.cfm?projID=351>).
- GEF.** 2007b. *The Public–Private Partnership Initiative: furthering the GEF strategy to enhance management with the private sector.* Project Executive Summary. Washington, DC.
- Glachant, M.** 1999. The cost efficiency of voluntary agreements for regulating industrial pollution: a Coasen approach. In C. Carraro & F. Leveque, eds. *Voluntary approaches in environmental policy*, pp. 75–91. Dordrecht, Netherlands, Kluwer Academic Publishing.
- Gorenf o, L.J. & Brandon, K.** 2006. Key human dimensions of gaps in global biodiversity conservation. *BioScience*, 56(9): 723–731.
- Grieg-Gran, M., Porras, I.T. & Wunder, S.** 2005. How can market mechanisms for forest environmental services help the poor? Preliminary lessons from Latin America. *World Development*, 33(9): 1511–1527.
- Guo, P., Choudhary M.A. & Rahman, A.** 1999. Tillage-induced changes in a silt loam under continuous cropping. II. Soil erosion and infiltrability under simulated rainfall. *International Agricultural Engineering Journal*, 8: 161–174.
- Haddad, L., Hoddinott, J. & Alderman, H., eds.** 1997. *Intrahousehold resource allocation in developing countries. Models, methods and policy.* Washington, DC, International Food Policy Research Institute (IFPRI) and Baltimore, MD, USA, The Johns Hopkins University Press.
- Harvey, C. & Haber, W.** 1999. Remnant trees and the conservation of biodiversity in Costa Rican pastures. *Agroforestry Systems*, 44(1): 37–68.
- Hawkins, D.E. & Lamoureux, K.** 2001. Global growth and magnitude of ecotourism. In D.B. Weaver, ed. *The encyclopedia of ecotourism*, pp. 63–83. New York, USA, CABI Publishing.
- Hayami, Y. & Ruttan, V.W.** 1985. *Agricultural development: an international perspective.* Revised edition. Baltimore, MD, USA, The Johns Hopkins University Press.
- Hearne, R.R.** 1996. *A review of economic appraisal of environmental goods and services with a focus on developing countries.* Environmental Economics Programme Discussion Paper No. DP96-03. Washington, DC, World Bank.
- Hebblethwaite, J.F.** 1993. Conservation tillage as a tool to conserve soil, moisture, energy, and equipment in large and small crop production systems. In J.P. Srivastava & H. Alderman, eds. *Agriculture and environmental challenges. Proceedings of the Thirteenth Agricultural Sector Symposium*, pp. 59–66. Washington, DC, World Bank.
- Herling, M. & King, N.** 2005. *National review of payments for catchment protection services in South Africa.* South Africa Working Paper Series No. 6. Pretoria, Council for Scientific and Industrial Research.
- Hochman, E., Zilberman, D. & Just, R.E.** 1977. Two-goal regional environmental policy: the case of the Santa Ana River Basin. *Journal of Environmental Economics and Management*, 4(1): 25–39.
- Hoff, K., Braverman, A. & Stiglitz, J.** 1993. *The economics of rural organization: theory, practice and policy.* New York, USA, Oxford University Press.
- Holden, S.T. & Binswanger, H.P.** 1998. Small farmer decision-making, market imperfections, and natural resource management in developing countries. In E. Lutz, ed. *Agriculture and the environment: perspectives on sustainable rural development*, pp. 50–71. Washington, DC, World Bank.
- ICF (Inter City Fund International).** 2006. *Voluntary carbon offsets market: outlook 2007.* London, ICF International.
- ICTSD (International Centre for Trade and Sustainable Development).** 2006. *Incentive measures and WTO rules.* COP-8 Biodiversity and Trade Briefings No. 1. Geneva, Switzerland.
- IEA GHG (International Energy Agency Greenhouse Gas Research and Development Programme).** 2005. *Assessment of the costs and enhanced potential for carbon sequestration in soils.* Technical Report 2005/04. Cheltenham, UK.
- IFAD (International Fund for Agricultural Development).** 2001. *Rural poverty report 2001: the challenge of ending rural poverty.* New York, USA, Oxford University Press.
- IFOAM (International Federation of Organic Agriculture Movements).** 2007. *Organics booming: 75 million acres of farmland are now organically certified worldwide.* Press release (available at http://www.organicconsumers.org/articles/article_4127.cfm, accessed 14 February 2007).
- Iftikhar, U.A., Kallesoe, M., Duraiappah, A., Sriskanthan, G., Poats, S.V. & Swallow, B.** 2007. *Exploring the inter-linkages among and between Compensation and Rewards for Ecosystem Services (CRES) and human well-being.* CES Scoping Study Issue Paper No. 1.

- ICRAF Working Paper No. 36. Nairobi, World Forestry Centre.
- IPCC (Intergovernmental Panel on Climate Change).** 1996. *Climate change 1995: the science of climate change. Contribution of Working Group I to the Second Assessment Report of the Intergovernmental Panel on Climate Change*, edited by J.T. Houghton, L.G. Meiro Filho, B.A. Callander, N. Harris, A. Kattenburg & K. Maskell. Cambridge, UK, Cambridge University Press.
- IPCC.** 2007a. Summary for policymakers. In *Climate change 2007: the physical science basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, UK, and New York, USA, Cambridge University Press.
- IPCC.** 2007b. *Climate change 2007: mitigation. Contribution of Working Group III to the Fourth Assessment Panel on Climate Change*. Cambridge, UK, and New York, USA, Cambridge University Press.
- IPCC.** 2007c. Summary for policymakers. In *Climate change 2007: impacts, adaptation and vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, UK, and New York, USA, Cambridge University Press.
- ISEAL (International Social and Environmental Accreditation and Labelling Alliance).** 2006. *ISEAL code of good practice for setting social and environmental standards* (available at <http://www.isealalliance.org/>).
- ISRIC (International Soil Reference and Information Centre).** 2007. Soil Degradation in South and Southeast Asia (ASSOD) database (available at <http://www.isric.org/UK/About+ISRIC/Projects/Track+Record/ASSOD.htm>).
- Jarvis, D.I., Padoch, C. & Cooper, D., eds.** 2007. *Managing biodiversity in agricultural ecosystems*. New York, USA, Columbia University Press.
- Johansson, P.** 1990. Valuing environmental damage. *Oxford Review on Economic Policy*, 6(1): 34–50.
- Jürgens, I., Schlamadinger, B. & Gomez, P.** 2006. Bioenergy and the CDM in the emerging market for carbon credits. *Mitigation and Adaptation Strategies for Global Change* 6, 11(5–6): 1051–1081.
- Kaltschmitt, M. & Hartmann, H., eds.** 2001. *Energie aus Biomasse. Grundlagen, Techniken und Verfahren*. Berlin and Heidelberg, Germany, Springer.
- Kerr, J.** 2002. Sharing the benefits of watershed management in Sukhomajri, India. In S. Pagiola, J. Bishop & N. Landell-Mills. *Selling forest environmental services: market-based mechanisms for conservation and development*. London, Earthscan.
- Kerr, S., Hendy, J., Liu, S. & Pfaff, A.S.P.** 2004. *Uncertainty and carbon policy integrity*. Motu Working Paper 04-03. Wellington, Motu Economic and Public Policy Research.
- Kirwan, B., Lubowski, R.N. & Roberts, M.** 2005. How cost-effective are land retirement auctions? Estimating the difference between payments and willingness to accept in the Conservation Reserve Program. *American Journal of Agricultural Economics*, 87(5): 1239–1247.
- Kumari, K.** 1995. *An environmental and economic assessment of forest management options: A case study in Malaysia*. Environment Department Paper No. 026. Washington, DC, World Bank.
- Lal, R.** 2000. World cropland soils as a source or sink for atmospheric carbon. In D. Sparks, ed. *Advances in agronomy*, Vol. 71, pp. 145–191. San Diego, CA, USA, Academic Press.
- Lal, R., Kimble, J.M., Follett, R.F. & Cole, C.V.** 1998. *The potential of U.S. cropland to sequester carbon and mitigate the greenhouse effect*. Boca Raton, FL, USA, CRC Press.
- Landell-Mills, N. & Porras, I.T.** 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. London, International Institute for Environment and Development.
- Lasse, R.** 2002. Soil carbon sequestration and the CDM: opportunities and challenges for Africa. *Climatic Change*, 54(4): 471–495.
- LEAD (Livestock, Environment and Development).** 2007. Virtual Centre and Development Web site (available at <http://www.virtualcentre.org/en/frame.htm>).
- Leimona, B.** 2007. *Conservation auctions for capturing willingness to accept of farmers in joining conservation programs in Sumberjaya (Lampung, Indonesia)*. Presentation given at the Scientific Conference of the Global Event on Payments/Rewards for Environmental Services. Lombok, Indonesia, 22–27 January 2007.
- Lewandrowski, J., Peters, M., Jones, C., House, R., Sperow, M., Eve, M. & Paustian, K.** 2004. *Economics of sequestering carbon in the U.S. agricultural sector*. ERS Technical Bulletin No. 1909. Washington, DC, Economic

- Research Service, United States Department of Agriculture.
- Lichtenberg, E. & Zimmerman, R.** 1999. Information and farmers' attitudes about pesticides, water quality, and related environmental effects. *Agriculture, Ecosystems & Environment*, 73(3): 227–236.
- Lipper, L.** 2001. Dirt poor: poverty, farmers and soil resource investment. In FAO. *Two essays on socio-economic aspects of soil degradation*, by L. Lipper and D. Osgood. FAO Economic and Social Development Paper No. 149. Rome.
- Lipper, L., Pingali, P. & Zurek, M.** Forthcoming. Less-favoured areas: looking beyond agriculture towards ecosystem services. In R. Ruben, J. Pender & A. Kuyvenhoven, eds. *Sustainable poverty reduction in less-favoured areas*. Wallingford, UK, CABI.
- Longley, C., Mango, N., Nindo, W. & Mango, C.** 2005. Conservation by committee: social impacts of the catchment approach in Western Kenya. In R. Tripp, ed. *Self-sufficient agriculture: labour and knowledge in small-scale farming*, Chapter 6, pp. 125–160. London, Earthscan.
- Margat, J.** 1990. *Les eaux souterraines dans le monde*. Orléans, France, Département eau, Bureau de recherches géologiques et minières (BRGM).
- Markandya, A., Harou, P., Bellù, L.G. & Cistulli, V.** 2002. *Environmental economics for sustainable growth. A handbook for practitioners*. Cheltenham, UK, Edward Elgar Publishing.
- May, P.H., Boyd, E., Veiga, F. & Chang, M.** 2004. *Local sustainable development effects of forest carbon projects in Brazil and Bolivia: a view from the field*. London, International Institute for Environment and Development.
- McNeely, J. & Scherr, S.** 2002. *Ecoagriculture: strategies to feed the world and save wild biodiversity*. Washington, DC, Island Press.
- Millennium Ecosystem Assessment.** 2003. *Ecosystems and human well-being: a framework for assessment*. Washington, DC, Island Press.
- Millennium Ecosystem Assessment.** 2005a. *Ecosystems and human well-being: synthesis*. Washington, DC, Island Press.
- Millennium Ecosystem Assessment.** 2005b. *Ecosystems and human well-being: current state and trends*. Millennium Ecosystem Assessment Series Vol. 1, edited by R. Hassan, R. Scholes & N. Ash. Washington, DC, Island Press.
- Minten, B., Randrianarison, L. & Swinnen, J.F.M.** 2007. Global supply chains, poverty and the environment: evidence from Madagascar. In J.F.M. Swinnen, ed. *Global supply chains, standards and the poor: how the globalization of food systems and standards affects rural development and poverty*, pp. 147–158. Wallingford, UK, CABI.
- Munasinghe, M. & Lutz, E.** 1993. Environmental economics and valuation in development decision-making. In M. Munasinghe, ed. *Environmental economics and natural resource management in developing countries*, pp. 17–71. Washington DC, World Bank for the Committee of International Development Institutions on the Environment (CIDIE).
- Muñoz-Piña, C., Guevara, A., Torres, J.M. & Braña, J.** 2005. *Paying for the hydrological services of Mexico's forests: analysis, negotiations and results*. INE Working Papers. Mexico City, Instituto Nacional de Ecología (INE).
- Murgueitio, R.E.** 1999. *Sistemas Agroforestales para la Producción Ganadera en Colombia*. Paper presented at the Seminario Intensificación de la Ganadería en Centroamérica: Beneficios Económicos y Ambientales, 24–26 May 1999, Turrialba, Costa Rica.
- Naylor, R., Steinfeld, H., Falcon, W., Galloway, J., Smil, V., Bradford, E., Alder, J. & Mooney, H.** 2005. Losing the links between livestock and land. *Science*, 310: 1621–1622.
- Nickerson, C.J. & Hellerstein, D.** 2003. Rural amenities: a key reason for farmland protection. *Amber Waves*, 1(1): 8. Washington, DC, Economic Research Service, United States Department of Agriculture.
- Niles, J.O., Brown, S., Pretty, J., Ball, A.S. & Fay, J.** 2002. Potential carbon mitigation and income in developing countries from changes in use and management of agricultural and forest lands. *Philosophical Transactions of The Royal Society Series A*, 360(1797): 1621–1639.
- Norton, N., Phipps, T. & Fletcher, J.** 1994. Role of voluntary programs in agricultural nonpoint pollution policy. *Contemporary Economic Policy*, 12: 113–121.
- OECD (Organisation for Economic Co-operation and Development).** 1998. *Improving the environment through reducing subsidies. Part I: summary and conclusions*. Paris.
- OECD/IEA (Organisation for Economic Co-operation and Development/International Energy Agency).** 2007. *Renewables in global energy supply*. An IEA Fact Sheet. Paris.
- Orlando, B., Baldock, D., Canger, S., Mackensen, J., Maginnis, S., Socorro, M., Rietbergen, S., Robledo, C. & Schneider, N.** 2002. *Carbon, forests and people: towards the integrated*

- management of carbon sequestration, the environment and sustainable livelihoods. Gland, Switzerland and Cambridge, UK, The World Conservation Union (IUCN).
- Ortiz, E., Sage, L. & Borge, C.** 2003. *Impacto del Programa de Pago de Servicios Ambientales en Costa Rica como medio de reducción de la pobreza en los medios rurales*. San José, Unidad Regional de Asistencia Técnica (RUTA).
- Pagiola, S.** 2002. Paying for water services in Central America: learning from Costa Rica. In S. Pagiola, J. Bishop & N. Landell-Mills, eds. *Selling forest environmental services: market-based mechanisms for conservation and development*, pp. 37–62. London, Earthscan.
- Pagiola, S.** 2006. *Payments for environmental services in Costa Rica*. Revised version of a paper presented at the ZEF/CIFOR Workshop on Payments for Environmental Services: Methods and Design in Developing and Developed Countries, Titisee, Germany, 15–18 June 2005.
- Pagiola, S. & Platias, G.** 2007. *Payments for environmental services: from theory to practice*. Washington, DC, World Bank.
- Pagiola, S. & Ruthenberg, I.M.** 2002. Selling biodiversity in a coffee cup: shade-grown coffee and conservation in Mesoamerica. In S. Pagiola, J. Bishop & N. Landell-Mills, eds. *Selling forest environmental services: market-based mechanisms for conservation and development*, pp. 103–126. London, Earthscan.
- Pagiola, S., Arcenas, A. & Platias, G.** 2005. Can payments for environmental services help reduce poverty? An exploration of the issues and the evidence to date from Latin America. *World Development*, 33(2): 237–253.
- Pagiola, S., Bishop, J. & Landell-Mills, N., eds.** 2002. *Selling forest environmental services: market-based mechanisms for conservation and development*. London, Earthscan.
- Pagiola, S., Rios, A.R. & Arcenas, A.** Forthcoming. *Can the poor participate in payments for environmental services? Lessons from the silvopastoral project in Nicaragua*. Paper prepared for submission to Special Issue of Environment and Development Economics on "Payment for Environmental Services and Poverty", edited by D. Zilberman & E. Bulte.
- Pagiola, S., Agostini, P., Gobbi, J., de Haan, C., Ibrahim, M., Murgueitio, E., Ramírez, E., Rosales, M. & Ruíz, J.P.** 2004. *Paying for biodiversity conservation services in agricultural landscapes*. Environment Department Paper No. 96, Environmental Economics Series. Washington, DC, World Bank.
- Pagiola, S., Ramírez, E., Gobbi, J., Haan, C.D., Ibrahim, M., Murgueitio, E. & Ruíz, J.P.** 2007. Paying for the environmental services of silvopastoral practices in Nicaragua. *Ecological Economics*. (in press)
- Palm, C.A., van Noordwijk, M., Woomer, P.L., Arevalo, L., Castilla, C., Cordeiro, D.G., Hairiah, K., Kotto-Same, J., Moukam, A., Parton, W.J., Riese, A., Rodrigues, V. & Sitompul, S.M.** 2005. Carbon losses and sequestration following land use change in the humid tropics. In C.A. Palm, S.A. Vosti, P.A. Sanchez & P.J. Ericksen, eds. *Slash and burn: the search for alternatives*, pp. 41–63. New York, USA, Columbia University Press.
- Parry, M.L., Rosenzweig, C. & Livermore, M.** 2005. Climate change, global food supply and risk of hunger. *Philosophical Transactions of the Royal Society B*, 360: 2125–2138.
- Parry, M.L., Rosenzweig, C., Iglesias, A., Livermore, M. & Fischer, G.** 2004. Effects of climate change on global food production under SRES emissions and socio-economic scenarios. *Global Environmental Change*, 14(1): 53–67.
- Pattanayak, S.K., Mercer, D.E., Sills, E. & Yang, J.-C.** 2003. Taking stock of agroforestry adoption studies. *Agroforestry Systems*, 57(3): 173–186.
- Paustian, K., Antle, J.M., Sheehan, J. & Paul, E.A.** 2006. *Agriculture's role in greenhouse gas mitigation*. Pew Center Solutions Report. Arlington, VA, USA, Pew Center on Global Climate Change.
- Pearce, D.W.** 1993. *Economic values and the natural world*. Cambridge, MA, USA, The MIT Press.
- Pearce, D.W. & Turner, R.K.** 1990. *Economics of natural resources and the environment*. Baltimore, MD, USA, The Johns Hopkins University Press.
- Perrot-Maitre, D.** 2006. *The Vittel payments for ecosystem services: a "perfect" PES case?* London, International Institute for Environment and Development.
- Perrot-Maitre, D. & Davis, P.** 2001. *Case studies of markets and innovative financial mechanisms for water services from forests*. Washington, DC, Forest Trends.
- Pfaff, A., Robalino, J.A. & Sanchez-Azofeifa, G.A.** 2006. *Payments for environmental services: empirical analysis for Costa Rica*. New York, USA, Columbia University.
- Pfaff, A., Kerr, S., Hughes, F., Liu, S., Sanchez-Azofeifa, G.A., Schimel, D., Tosi, J. & Watson, V.** 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(3): 203–221.
- Pfaff, A., Kerr, S., Lipper, L., Cavatassi, R., Davis, B., Hendy, J. & Sanchez-Azofeifa, G.A.** 2007. Will buying tropical forest carbon benefit the poor? Evidence from Costa Rica. *Land Use Policy*, 24(3): 600–610.
- Pingali, P.** 2007. Westernization of Asian diets and the transformation of food systems: implications for research and policy. *Food Policy*, 32(3): 281–298.
- Pingali, P., Hossain, M., Pandey, S. & Leimar Price, L.** 1998. Economics of nutrient management in Asian rice systems: towards increasing knowledge intensity. *Field Crops Research*, 56(1–2): 157–176.
- Plan Vivo.** 2007. Web site (available at <http://www.planvivo.org/>).
- Poffenberger, M., Ravindranath, N.H., Pandey, D.N., Murthy, I.K., Bist, R. & Jain, D.** 2001. *Communities & climate change: the Clean Development Mechanism and village-based forest restoration in Central India. A case study from Harda Forest Division, Madhya Pradesh, India.* Santa Barbara, CA, USA, Community Forestry International.
- Point Carbon.** 2007. *Carbon 2007 – A new climate for carbon trading*, edited by K. Røine & H. Hasselknippe. Report published at Point Carbon's 4th annual conference, Carbon Market Insights 2007, 13–15 March 2007, Copenhagen (available at http://www.pointcarbon.com/getfile.php/fileelement_105366/Carbon_2007_final.pdf).
- Popkin, B.M.** 2004. The nutrition transition: an overview of world patterns of change. *Nutrition Reviews*, 62(Suppl. 1): 140–143.
- Pretty, J.N., Noble, A.D., Bossio, D., Dixon, J., Hine, R.E., Penning de Vries, F.W.T. & Morison, J.T.L.** 2006. Resource-conserving agriculture increases yields in developing countries. *Environmental Science and Technology*, 40(4): 1114–1119.
- Price, L.** 2001. Demystifying farmers' entomological and pest management knowledge: a methodology for assessing the impacts on knowledge from IPM-FFS and NES interventions. *Agriculture and Human Values*, 18(2): 153–176.
- Rasmussen, P.E., Albrecht, S.L. & Smiley, R.W.** 1998. Soil C and N changes under tillage and cropping systems in semi-arid Pacific Northwest agriculture. *Soil & Tillage Research*, 47(3–4): 197–205.
- Regouin, E.** 2003. To convert or not to convert to organic farming. In *Organic agriculture – Sustainability, markets and policies. Proceedings of an OECD workshop, September 2002, Washington, DC*, pp. 227–235. Paris, OECD and Wallingford, UK, CABI.
- Ribaud, M.** 2006. Federal laws protecting environmental quality. In K. Wiebe & N. Gollehon, eds. *Agricultural resources and environmental indicators*, 2006 edition. Chapter 5.7, pp. 222–227. Economic Information Bulletin No. (EIB-16). Washington, DC, Economic Research Service, United States Department of Agriculture (also available at http://www.ers.usda.gov/publications/arei/eib16/eib16_5-7.pdf).
- Roberts, M. & Bucholtz, S.** 2006. Slippage in the Conservation Reserve Program or spurious correlation? A rejoinder. *American Journal of Agricultural Economics*, 88(2): 512–514.
- Robertson, N. & Wunder, S.** 2005. *Fresh tracks in the forest: assessing incipient payments for environmental services initiatives in Bolivia.* Bogor, Indonesia, Center for International Forestry Research.
- Rosa, R., Kandel, S., Dimas, L., Cuéllar, N. & Méndez, E.** 2003. *Compensation for environmental services and rural communities. Lessons from the Americas and key issues for strengthening community strategies.* San Salvador, Programa Salvadoreño de Investigación sobre Desarrollo y Medio Ambiente (PRISMA).
- Rosenzweig, M.R. & Binswanger, H.P.** 1993. Wealth, weather risk and the composition and profitability of agricultural investments. *The Economic Journal*, 103(416): 56–78.
- Sa, J.C., Cerri, C.C., Dick, W.A., Lal, R., Venske Filho, S.P., Piccolo, M.C. & Feigl, B.E.** 2001. Organic matter dynamics and carbon sequestration rates for a tillage chronosequence in a Brazilian oxisol. *Soil Science Society of America Journal*, 65: 1486–1499.
- Sadoulet, E. & de Janvry, A.** 1995. *Household behavior under risk with subsistence food production*, Berkeley, CA, USA, University of California (mimeo).
- Sandor, R.** 2000. CDM – simplicity is key. *Environmental Finance*, 1(2): 11.
- Saturnio, H.M. & Landers, J.N., eds.** 1997. *O meio ambiente e o plantio direto.* Goiânia, Brazil, Associação de Plantio Direto do Cerrado (APDC).
- Scherr, S., White, A. & Kaimowitz, D.** 2002. *Making markets work for forest communities. Policy brief.* Washington, DC, Forest Trends and Bogor, Indonesia, Center for International Forestry Research.
- Scherr, S., White, A. & Khare, A.** (with contributions from M. Inbar and A. Molar).

2004. *For services rendered – The current status and future potential of markets for the ecosystem services provided by tropical forests*. ITTO Technical Series No. 21. Yokohama, Japan, International Tropical Timber Organization.
- Schroth, G., Da Fonseca, G.A.B., Harvey, C.A., Gascon, C., Vasconcelos, H.L. & Izac, A-M.N.** 2004. *Agroforestry and biodiversity conservation in tropical landscapes*. Washington, DC, Island Press.
- Searle, R., Colby, S. & Milway, K.S.** 2004. *Moving eco-certification mainstream*. Boston, MA, USA and San Francisco, CA, USA, The Bridgespan Group.
- Sengupta, S., Mitra, K., Saigal, S., Gupta, R., Tiwari, S. & Peters, N.** 2003. *Developing markets for watershed protection services and improved livelihoods in India*. New Delhi, Winrock International and London, International Institute for Environment and Development. (unpublished draft)
- Shiklomanov, I.A. & Rodda, J.A., eds.** 2003. *World water resources at the beginning of the twenty-first century*. Cambridge, UK, Cambridge University Press.
- Smit, A., Driessen, P. & Glasbergen, P.** Forthcoming. Constraints on the conversion to sustainable production: the case of the Dutch potato chain. *Business Strategy and the Environment*.
- Smith, J. & Scherr, S.** 2002. *Forest carbon and local livelihoods: assessment of opportunities and policy recommendations*. CIFOR Occasional Paper 37. Bogor, Indonesia, Center for International Forestry Research.
- Stern, N.** 2007. *The economics of climate change: The Stern Review*. Cambridge, UK, Cambridge University Press.
- Sullivan, P., Hellerstein, D., Hansen, L., Johansson, R., Koenig, S., Lubowski, R., McBride, W., McGranahan, D., Roberts, M., Vogel, S. & Bucholtz, S.** 2004. *The Conservation Reserve Program: economic implications for rural America*. Agricultural Economic Report No. AER834. Washington, DC, Economic Research Service, United States Department of Agriculture.
- Sunding, D. & Zilberman, D.** 2001. The agricultural innovation process: research and technology adoption in a changing agricultural sector. In B.L. Gardner & G.C. Rausser, eds. *Handbook of agricultural economics. Part 1A. Agricultural production*, Chapter 4, pp. 207–261. Amsterdam, North-Holland Publishing.
- Swallow, B., Meinzen-Dick, R. & van Noordwijk, M.** 2005. *Localizing demand and supply of environmental services: interactions with property rights, collective action and the welfare of the poor*. CGIAR Systemwide Program on Collective Action and Property Rights (CAPRI) Working Paper No. 42. Washington, DC, International Food Policy Research Institute and World Agroforestry Centre.
- Swallow, B.M., Kallesoe, M., Iftikhar, U., van Noordwijk, M., Bracer, C., Scherr, S., Raju, K., Poats, S., Duraiappah, A., Ochieng, B., Mallee, H. & Rumley, R.** 2007a. *Compensation and rewards for environmental services in the developing world: framing pan-tropical analysis and comparison*. ICRAF Working Paper No. 32. Nairobi, World Agroforestry Centre.
- Swallow, B.M., Leimona, B., Yatich, T., Velarde, S.J. & Puttaswamaiah, S.** 2007b. *The conditions for effective mechanisms of compensation and rewards for environmental services*. CES Scoping Study Issue Paper No. 3. ICRAF Working Paper No. 38. Nairobi, World Agroforestry Centre.
- Tattenbach, F., Obando, G. & Rodríguez, J.** 2006. *Mejora del excedente nacional del Pago de Servicios Ambientales*. San José, Fondo Nacional de Financiamiento Forestal (FONAFIFO).
- Teixeira, G.** 2006. *Many paths, no destination for Brazil's tourist industry*. News article, Ecosystem Marketplace Web site, 29 September (available at http://ecosystemmarketplace.com/pages/article.news.php?component_id=4572&component_version_id=6793&language_id=12).
- ten Kate, K., Bishop, J. & Bayon, R.** 2004. *Biodiversity offsets: views, experience, and the business case*. Glad, Switzerland and Cambridge, UK, The World Conservation Union and London, Insight Investment.
- Thacher, T.A., Lee, D.R. & Schelhas, J.** 1996. Farmer participation in government sponsored reforestation incentive programs in Costa Rica. *Agroforestry Systems*, 35(3): 269–289.
- Tilman, D., Cassman, K.G., Matson, P.A., Naylor, R. & Polasky, S.** 2002. Agricultural sustainability and intensive production practices. *Nature*, 418: 671–677.
- Tipper, R.** 2002. Helping indigenous farmers participate in the international market for carbon services: the case of Scolel Té. In S. Pagiola, J. Bishop & N. Landell-Mills, eds. *Selling forest environmental services: market-based mechanisms for conservation and development*, pp. 223–234. London, Earthscan.
- Tomich, T.P., Cattaneo, A., Chater, S., Geist, H.J., Gockowski, J., Kaimowitz, D., Lambin, E., Lewis, J., Ndoye, O., Palm, C., Stolle, F., Sunderlin,**

- W.D., Valentim, J.F., van Noordwijk, M. & Vosti, S.A.** 2005a. Balancing agricultural development and environmental objectives: assessing tradeoffs in the humid tropics *In* C. Palm, S.A. Vosti, P. Sanchez & P.J. Ericksen, eds. *Slash-and-burn agriculture: the search for alternatives*, pp. 415–440. New York, USA, Columbia University Press.
- Tomich, T.P., Palm, C.A., Velarde, S.J., Geist, H., Gillison, A.N., Lebel, L., Locatelli, M., Mala, W., van Noordwijk, M., Sebastian, K., Timmer, D. & White, D.** 2005b. *Forest and agroecosystem tradeoffs in the humid tropics. a crosscutting assessment by the Alternatives to Slash-and-Burn Consortium conducted as a sub-global component of the Millennium Ecosystem Assessment*. Nairobi, ASB.
- Turpie, J. & Blignaut, J.** 2005. *Payments for ecosystem services: towards improved biodiversity conservation and water security in South Africa, a semi-arid, developing country*. Presentation given at the ZEF/CIFOR Workshop on Payments for Environmental Services: Methods and Design in Developing and Developed Countries. 15–18 June 2005, Titisee, Germany (available at http://www.cifor.cgiar.org/pes/publications/pdf_files/PES_SA_Presentation.pdf).
- Uchida, E., Rozelle, S. & Xu, J.** 2007. *Conservation payments, liquidity constraints and off-farm labor: impact of the Grain for Green program on rural households in China*. Palo Alto, CA, USA, Freeman Spogli Institute of International Studies, Stanford University.
- Uchida, E., Xu, J. & Rozelle, S.** 2005. Grain for green: cost-effectiveness and sustainability of China's Conservation Set-aside Program. *Land Economics*, 81(2): 247–264.
- Udry, C.** 1994. Risk and insurance in a rural credit market: an empirical investigation in northern Nigeria. *Review of Economic Studies*, 61(3): 495–526.
- UN.** 2007. *World Population Prospects: the 2006 revision. Highlights*. New York, USA, United Nations.
- UNCTAD (United Nations Conference on Trade and Development).** 2007. *Green Box subsidies: a theoretical and empirical assessment*. New Delhi.
- UN-Energy.** 2007. *Sustainable bioenergy: a framework for decision-makers*. New York, USA.
- UNDP (United Nations Development Programme).** 2005. *Investing in environmental wealth for poverty reduction. Environment for the MDGs*. Prepared on behalf of the Poverty-Environment Partnership by UNDP, UNEP, IIED, IUCN and WRI. New York, USA.
- UNDP.** 2006. *Human Development Report 2006: beyond scarcity: power, poverty and the global water crisis*. New York, USA, Palgrave Macmillan.
- UNECE (United Nations Economic Commission for Europe).** 1995. *State of the art on monitoring and assessment: rivers. UNECE Task Force on Monitoring and Assessment, Draft Report*. Lelystad, Netherlands, Institute for Inland Water Management and Waste Water Treatment (RIZA).
- UNEP (United Nations Environment Programme).** 2005. *Baseline methodologies for Clean Development Mechanism projects – a guidebook*, by R.M. Shrestha, S. Sharma, G.R. Timilsina & S. Kumar, edited by M-K. Lee. The UNEP project CD4CDM. Roskilde, Denmark, UNEP Risø Centre on Energy, Climate and Sustainable Development, Risø National Laboratory.
- UNFCCC (United Nations Framework Convention on Climate Change).** 2007. *Views on the range of topics and other relevant information relating to reducing emissions from deforestation in developing countries: submissions from intergovernmental organizations*. Twenty-sixth session of the Subsidiary Body for Scientific and Technological Advice, 7–18 May 2007. Bonn, Germany.
- UNWTO (World Tourism Organization).** 1998. Ecotourism. *WTO News I*.
- USDA (United States Department of Agriculture).** 2007. *Conservation Reserve Program enrolment statistics and program summary 2006 fiscal year*. Washington, DC, USDA Farm Service Agency.
- van Lynden, G.W.J. & Oldeman, L.R.** 1997. *The assessment of the status of human-induced soil degradation in South and Southeast Asia*. Wageningen, Netherlands, International Soil Reference and Information Centre.
- van Noordwijk, M., Chandler, F.J. & Tomich, T.P.** 2004. *An introduction to the conceptual basis of RUPES: rewarding upland poor for the environmental services they provide*. Bogor, Indonesia, ICRAF-Southeast Asia.
- van Noordwijk, M., Leimona, B., Emerton, L., Tomich, T.P., Velarde, S.J., Kallesoe, M., Sekher, M. & Swallow, B.** 2007. *Criteria and indicators for environmental service compensation and reward mechanisms: realistic, voluntary, conditional and pro-poor*. CES Scoping Study Issue Paper No. 2. ICRAF Working Paper No. 37. Nairobi, World Agroforestry.
- Verchick, R.M.** 2007. Risk, fairness, and the geography of disaster. *Issues in Legal Scholarship*, Catastrophic Risks: Prevention,

- Compensation, and Recovery: Article 6. The Berkeley Electronic Press.
- Vigar, D.** 2006. *Climate change: the role of global companies*. London, Tomorrow's Company.
- Waage, S.** 2005. *Building capacity for institutionalizing ecosystem services in developing countries*. Supplement III – Building national capacity for payments for ecosystem Services. Report to the UNDP/GEF. Washington, DC, Forest Trends.
- Walker, C.** 2007. *Taking stock: assessing ecosystem services conservation in Costa Rica*. News article, Ecosystem Marketplace Web site, 21 May.
- Wassenaar, T., Gerber, P., Verburg, P.H., Rosales, M., Ibrahim, M. & Steinfeld, H.** 2007. Projecting land use changes in the Neotropics: the geography of pasture expansion into forest. *Global Environmental Change*, 17(1): 86–104.
- Weinberg, M. & Claassen, R.** 2005. A multitude of design decisions influence Conservation Program performance, *Amber Waves*, 3(5): 8. Washington, DC, Economic Research Service, United States Department of Agriculture.
- Weitzman, M.L.** 1974. Prices vs. quantities. *The Review of Economic Studies*, 41(4): 477–791.
- Wertz-Kanounnikoff, S.** 2006. *Payments for environmental services – a solution for biodiversity conservation?* Idées pour le débat N° 12. Paris, Institut du développement durable et des relations internationales (IDDRI).
- WHO (World Health Organization).** 2006. *Implementing the global strategy on diet, physical activity and health*. Diet and physical activity: global programming note 2006–2007. Geneva, Switzerland.
- Wiebe, K., Tegene, A. & Kuhn, B.** 1996. Partial interests in land: policy tools for resource use and conservation. Agricultural Economic Report No. AER744. Washington, DC, Economic Research Service, United States Department of Agriculture.
- Wik, M., Pingali, P. & Broca, S.** 2007. *Global agricultural performance: past trends and future prospects*. Background paper for the World Bank's *World Development Report 2008*.
- Wilson, K.A., McBride, M.F., Bode, M. & Possingham, H.P.** 2006. Prioritizing global conservation efforts. *Nature*, 440(7082): 337–340.
- World Bank.** 2003a. *World Development Report 2003. Sustainable development in a dynamic world: transforming institutions, growth, and quality of life*. Washington, DC, World Bank and New York, USA, Oxford University Press.
- World Bank.** 2003b. *Reaching the rural poor: a renewed strategy for rural development*, by Csaba Csaki. Washington, DC.
- World Bank.** 2006. *WDI Online*. World Development Indicators database (available at <http://publications.worldbank.org/WDI/>).
- World Bank.** 2007. *State and Trends of the Carbon Market 2007*. Washington, DC, World Bank in cooperation with the International Emissions Trading Association.
- World Bank/IETA.** 2006. *State and Trends of the Carbon Market 2006*. Washington, DC, World Bank and the International Emissions Trading Association.
- WRI in collaboration with UNDP, UNEP & World Bank.** 2005. *World Resources 2005: the wealth of the poor – managing ecosystems to fight poverty*. Washington, DC, World Resources Institute.
- WWF (World Wide Fund for Nature).** 2007. *Ecoregions*. Web site (available at <http://www.worldwildlife.org/science/ecoregions.cfm>).
- Wunder, S.** 2005. *Payments for environmental services: some nuts and bolts*. Occasional Paper No. 42. Bogor, Indonesia, Center for International Forestry Research.
- Wunder, S.** 2006. Are direct payments for environmental services spelling doom for sustainable forest management in the tropics? *Ecology and Society*, 11(2): 23.
- Wunder, S., The, B.D. & Ibarra, E.** 2005. *Payment is good, control is better. Why payments for forest environmental services in Vietnam have so far remained incipient*. Bogor, Indonesia, Center for International Forestry Research.
- Wünscher, T., Engel, S. & Wunder, S.** 2006. Payments for environmental services in Costa Rica: increasing efficiency through spatial differentiation. *Quarterly Journal of International Agriculture*, 45(4): 317–335.
- Xu, Z., Bennett, M.T., Tao, R. & Xu, J.** 2004. China's Sloping Land Conversion Programme four years on: current situation, pending issues. *International Forestry Review*, 6(3–4): 317–326.
- Zbinden, S. & Lee, D.R.** 2005. Paying for environmental services: an analysis of participation in Costa Rica's PSA Program. *World Development*, 33(2): 255–272.
- Zilberman, D., Lipper, L. & McCarthy, N.** Forthcoming. When could payments for environmental services benefit the poor. *Environment and Development Economics*.

Special chapters of *The State of Food and Agriculture*

In addition to the usual review of the recent world food and agricultural situation, each issue of this report since 1957 has included one or more special studies on problems of longer-term interest. Special chapters in earlier issues have covered the following subjects:

- 1957** Factors influencing the trend of food consumption
Postwar changes in some institutional factors affecting agriculture
- 1958** Food and agricultural developments in Africa south of the Sahara
The growth of forest industries and their impact on the world's forests
- 1959** Agricultural incomes and levels of living in countries at different stages of economic development
Some general problems of agricultural development in less-developed countries in the light of postwar experience
- 1960** Programming for agricultural development
- 1961** Land reform and institutional change
Agricultural extension, education and research in Africa, Asia and Latin America
- 1962** The role of forest industries in the attack on economic underdevelopment
The livestock industry in less-developed countries
- 1963** Basic factors affecting the growth of productivity in agriculture
Fertilizer use: spearhead of agricultural development
- 1964** Protein nutrition: needs and prospects
Synthetics and their effects on agricultural trade
- 1966** Agriculture and industrialization
Rice in the world food economy
- 1967** Incentives and disincentives for farmers in developing countries
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- 1968** Raising agricultural productivity in developing countries through technological improvement
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- 1969** Agricultural marketing improvement programmes:
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BOOKS, MONOGRAPHS AND BOOK CHAPTERS

Anderson, C.L. & **Stamoulis, K.** 2007. Applying behavioural economics to international development policy. In G. Mavrotas & A. Shorrocks, eds. *Advancing development: core themes in global economics*. Basingstoke, UK, Palgrave MacMillan and UNU-WIDER.

Anríquez, G. 2006. Corrupción y gasto público rural en América Latina: el impacto en el desarrollo rural. In FAO. *Políticas públicas y desarrollo rural en América Latina y el Caribe: el papel del gasto público*, edited by F. Soto Vaquero, J. Santos Rocha & J. Ortega. Santiago.

Evenson, R. & **Pingali, P.**, eds. 2007. *Handbook of agricultural economics*, Vol. IIIA. Amsterdam, Elsevier Press.

Evenson, R. & **Raney, T.**, eds. 2007. *The political economy of GM foods*, Critical Writings in Agricultural Economics. Cheltenham, UK and Northampton, MA, USA, Edward Elgar.

Flores, M. 2007. Responding to food insecurity: could we have done it better? In Pain & Sutton, 2007, pp. 283–295.

Guha-Khasnobis, B., Acharya, S. & **Davis, B.**, eds. 2007a. *Food security indicators, measurement, and the impact of trade openness*. Oxford, UK, Oxford University Press. (in press)

Guha-Khasnobis, B., Acharya, S. & **Davis, B.**, eds. 2007b. *Food insecurity, vulnerability and human rights failure*. Basingstoke, UK, Palgrave MacMillan. (in press)

Lovendal, C. & Knowles, M. 2007. Tomorrow's hunger: a framework for understanding tomorrow's hunger. In Guha-Khasnobis, Acharya & **Davis**, 2007a.

Mechlem, K. & **Raney, T.** 2007. Agricultural biotechnology and the right to food. In F. Francioni, ed. *Biotechnologies and international human rights*. Studies in International Law. Oxford, UK, Hart Publishing.

Migotto, M., **Davis, B.**, Carletto, C. & Beegle, K. 2007. Measuring food security using respondents' perception of food consumption adequacy. In Guha-Khasnobis, Acharya & **Davis**, 2007a.

Pain, A. & **Sutton, J.**, eds. 2007. *Reconstructing agriculture in Afghanistan*, with Foreword by **P. Pingali**. Rugby, UK, FAO and Practical Action Publishing.

Pingali, P., Kwaja, Y. & Meijer, M. 2007. The role of the public and private sectors in commercializing small farms and reducing transaction costs. In J.F.M. Swinnen, ed. *Global supply chains, standards and the poor: how the globalization of systems and standards affects rural development and poverty*. Wallingford, UK, CAB International.

Pingali, P. & Raney, T. 2007. Asian agricultural development: from the green revolution to the gene revolution. In A. Baliscan, and N. Fuwa, eds. *Reasserting the rural development agenda: lessons learned and emerging challenges in Asia*. Singapore, Institute of Southeast Asian Studies and Los Baños, Philippines, Southeast Asian Regional Center for Graduate Study and Research in Agriculture.

Tefft, J., McGuire, M. & Maunder, N. 2006. *Planning for the future: an assessment of food security early warning systems in sub-Saharan Africa. Synthesis report*. Rome, FAO.

Zeza, A. & Migotto, M. 2007. Towards a framework for agricultural development and food security in Afghanistan. In Pain & Sutton, 2007, pp. 251–281.

JOURNAL ARTICLES

Anríquez, G. & Valdés, A. 2006. Determinants of farm revenue in Pakistan. *The Pakistan Development Review*, 45(2): 281–301.

Anríquez, G. & López, R. 2007. The effect of agricultural growth on poverty in an archetypical middle income country: Chile in the 1990s. *Agricultural Economics*, 36(2): 191–202.

Azzarri, C., Carletto, G., Davis, B., Stampini, M. & Zeza, A. 2006. Monitoring poverty without consumption data: an application using the Albania Panel Survey. *Eastern European Economics*, 44(1): 59–82.

Carletto, G., & Zeza, A. 2006. Being poor, feeling poorer: combining objective and subjective measures of welfare in Albania. *Journal of Development Studies*, 42(5): 739–760.

Carletto, G., Davis, B., Stampini, M. & Zeza, A. 2006. Internal mobility and international migration in Albania. *International Migration Review*, 40(4): 767–785.

Croppenstedt, A. 2006. Household income structure and determinants in rural Egypt. *Egyptian Journal of Agricultural Economics*, 16(3): 1–18.

Lopriore, C., Dop, M.-C., Solal-Céligny, A. & Lagnado, G. 2007. Excluding infants under 6 months of age from surveys: impact on prevalence of pre-school undernutrition. *Public Health Nutrition*, 10(1): 79–87.

López, R., Anríquez, G. & Gulati, S. 2007. Structural change and sustainable development. *Journal of Environmental Economics and Management*, 53(3): 307–322.

McGregor, J., McKay, A. & Velazco, J. 2007. Needs and resources in the investigation of well-being in developing countries: illustrative evidence from Bangladesh and Peru. *Journal of Economic Methodology*, 14(1): 107–131.

Pfaff, A., Kerr, S., Lipper, L., Cavatassi, R., Davis, B., Hendy, J. & Sanchez, A. 2007. Will buying tropical forest carbon benefit the poor? Evidence from Costa Rica. *Land Use Policy*, 24(3): 600–610.

Pingali, P. 2007. Westernization of Asian diets and the transformation of food systems: Implications for research and policy. *Food Policy*, 32(3): 281–298.

Raney, T. & Pingali, P. 2007. Sowing a gene revolution. *Scientific American*, 29(3): 104–111.

Schipull, P., Dawe, D., Villate, E., De Sagun, M., Valencia, S. & Lopez, O. Forthcoming. Iron supplementation compliance among pregnant women in Bicol, Philippines. *Public Health Nutrition*. doi:10.1017/S1368980007000237.

Schmidhuber, J. & Tubiello, F. Forthcoming. Global food security under climate change. *Proceedings of the National Academy of Sciences*.

Stampini, M., Davis, B. & Carletto, G. Forthcoming. International migration from Albania: the role of family networks and previous experience. *Eastern European Economics*.

Timmer, C.P. & Dawe, D. 2007. Managing food price instability in Asia: a macro food security perspective. *Asian Economic Journal*, 21(1): 1–18.

Velazco, J., Young, T. & Colman, D. 2006. Non-farm rural activities in a peasant economy: the case of North Peruvian Sierra. *Journal of International Development*, 18(2): 207–221.

JOURNAL

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THE STATE OF FOOD AND AGRICULTURE

2007

The State of Food and Agriculture 2007 explores the potential for agriculture to provide enhanced levels of environmental services alongside the production of food and fibre. The report concludes that demand for environmental services from agriculture – including climate change mitigation, improved watershed management and biodiversity preservation – will increase in the future, but better incentives to farmers are needed if agriculture is to meet this demand. As one among several other possible policy tools, payments to farmers for environmental services hold promise as a flexible approach to enhancing farmer incentives to sustain and improve the ecosystems on which we all depend. Nevertheless, challenges must be overcome if the potential of this approach is to be realized, especially in developing countries. Policy efforts at international and national levels are necessary to establish the basis for such payments. The design of cost-effective programmes requires careful analysis of the specific biophysical and socio-economic contexts and consideration of the poverty impacts programmes may have. By clarifying the challenges that need to be addressed in implementing such an approach, this report is intended to contribute to the realization of its potential.

Included in this issue is a mini CD-ROM of the FAO Statistical Yearbook 2005–2006 Vol. 2/1, containing time series data for 200 countries in Arabic, Chinese, English, French and Spanish.

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