

# Sustaining the World's Natural Capital

William H. Hudnut III

The 2008 Farm Bill prompted creation of an Office of Ecosystem Services and Markets (OESM) within the U.S. Department of Agriculture (USDA), the first such office statutorily established in *any* country for the purpose of promoting “market based approaches to conservation/conservation programs in environmental service markets.”<sup>1</sup>

This initiative constitutes a major policy innovation that can potentially have a huge impact on environmental conservation and farm revenues. It also offers USDA an extraordinary opportunity to show real leadership in an uncharted area, if the political will and scientific expertise are present.

## Natural Capital Under Siege

The challenge to embark on such a program is fairly obvious because damage to the world's natural capital has been severe. Any day, one can read about it: One quarter of marine fish stocks are overharvested; Twenty-four percent of the earth's terrestrial surface is under cultivation, much of it unsustainably; More than 50% of wetlands (lakes, rivers, marshes, coastal regions) in parts of North America, Europe, Australia, and New Zealand were destroyed during the 20<sup>th</sup> century; Every second, a slice of the earth's rainforest natural capital the size of a football field is cut down; If current rates of human destruction of the biosphere continue, one-half of all species of life on earth will be extinct in 100 years. The discharge of greenhouse gasses into the atmosphere is creating climate change and global warming; and, so on.<sup>2</sup>

This brief litany is frightening, because people the world over depend on nature and ecosystem services for their survival. Life cannot be sustained without food, fiber, water, air, and energy.<sup>3</sup>

## A Significant Forward Action

So, what can be done before it's too late, to stay the depletion of earth's natural capital? One step among many is the authorization for USDA to provide economic incentives for conservation. How? By empowering OESM to develop standards that other agencies can enforce. Presently, a lack of standards and accounting procedures “that make transparent the benefits that are being produced and marketed”<sup>4</sup> impedes the full development of environmental services markets.

To understand how complicated setting standards can be, imagine a forest. It has value for grazing, timber, fuel, and pulpwood, but it also provides unrecognized benefits in carbon sequestration, watershed protection, harvesting of non-timber products such as raw materials for certain medicines (118 of the top 150 prescription drugs used in the U.S. come from natural sources!),<sup>5</sup> and recreation and hunting. Putting a value on *all* these services will help people understand what conserving and sustaining a forest truly provides. It will also encourage us to develop markets where these services can be traded.

## The Innovative Idea

The idea behind tying conservation to marketing of ecosystem services is to turn green into gold; that is, to capitalize on opportunities for agriculture and forestry to develop new income



William H. Hudnut III, a former clergyman, Congressman and Mayor of Indianapolis, is a Senior Fellow Emeritus at the Urban Land Institute and

managing partner of his own consulting firm. The author of five books on cities, he believes strongly in the importance of a market based approach to generating revenues from users, based on the principle that the user of an asset should pay his/her share of the freight. He also thinks the new Office of Ecosystem Services and Markets in the U.S. Department of Agriculture deserves more attention than it has received.

streams by undertaking conservation and land management activities that would provide environmental benefits and services that could be marketed. Environmental services are the benefits we receive, but often take for granted, from the world's natural capital, such as purer air and water. In exchange for the service, the provider is compensated either through direct payment or through the sale of credits that can be traded in a market to a buyer who needs them to offset environmental damage he, she or it is causing. Ecosystem service markets can also facilitate investments in voluntary action not directly related to offsetting environmental damage. For example, foundations or the general public can purchase credits to satisfy their own objectives.

## Striking the Deal: Four Steps

The transaction process actually involves four complex stages, each of which requires the advice of experts, scientists, economists, and other players in the field.

First, the scarcity has to be determined and measured. For example,

the atmosphere can only hold so much carbon before we experience unacceptable effects on climate and the environment. Therefore, what is scarce is the capacity of the atmosphere to absorb greenhouse gas emissions, which is a service provided by the atmosphere. Without understanding how scarce a service is, its value cannot be estimated.

Secondly, quantifying an ecosystem service requires breaking it down into convenient units of measurement. Data has to be assembled from many sources—planning documents, government statistics, stakeholder interviews, and field visits, for example—and then processed in computer models and fed into a proposal. Corn, soybeans and wheat can be measured by yield per acre; gallons of filtered and purified water can be determined by the amount extracted from sources on or under the ground; the value of a body of water can be ascertained by the productivity of its harvestable fish. More difficult is measuring the amount of carbon that a forest stores, or assessing the impact of hydrological change on an ecosystem's service. If farmers, ranchers and landowners are to be rewarded for changing their practice from one kind of land management to another, how much should they be paid? The data will help answer that question.

The third step requires buyers to facilitate interaction with suppliers and supplier organizations to negotiate a transaction. Environmental markets are made, not born. The expertise of brokers, technical and business support services, project developers, and financial experts, will have to be enlisted. Presently, there seems to be a huge demand in the investor community for markets in ecosystem services. Several organizations offer bridge-building assistance to bring partners together to close a contract.<sup>6</sup> The market drives the prices that are negotiated, and the agreements are entered into voluntarily.

The fourth step involves monitoring the deal to verify that the promised service is being delivered, or that the agreed-upon land management practice is actually being implemented. This step requires the involvement of third parties, whose specialized help is readily available because verification and documentation “have become veritable cottage industries.”<sup>7</sup> Agreement about who will do this and the indicators that will be employed should be incorporated into step three. Just as government sets standards for physicians but does not evaluate the results, so here, the government's role is to verify the verifiers, that is, to make sure they are certified and legitimate, and that their conformance with the standards are public knowledge. The need for transparency here is very clear, and

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certain information will have to be divulged, as the Securities Exchange Commission requires in another arena, although proprietary information will need to be protected.

### The Third Wave of Conservation

If this analysis is correct, it seems clear that we have arrived as a country at the third wave of conservation. The first was “progressive conservationism,” exemplified by Theodore Roosevelt and the federal effort to preserve and protect our natural resources through acquisition. “Regulatory conservationism” constituted the next wave, incorporated in legislation known as “the Big Ten” of regulation,<sup>8</sup> with various agencies authorized to issue the “regs” and do the enforcement. But now, a third wave of conservation has rolled in, founded on performance-based stan-

dards. Call it “sustainable conservationism.” Its goal is to design a long-term healthy relationship between ecology and economy. The Department of Interior thinks of the process as the creation of a “conservation bank,” which is defined as “a free-market enterprise that offers landowners economic incentives to protect natural resources, saves developers time and money by providing them with certainty of pre-approved compensation lands, and provides long-term protection of habitat.”<sup>9</sup>

### An Opportunity for Leadership

The federal government must show coherent leadership in this area. Its job is to set the table so markets can operate. Government establishes the rules of the road. That means: break down the silos and put aside the turf protection in different agencies. Such collaboration will move the marketing of ecosystem services forward, and might even lead to the creation of an office or commission with coordinating authority over both standard setting and regulatory powers, like the Commodity Futures Trading Commission.

The government can also encourage efforts to broaden the public's understanding of what's happening here. This is a cutting edge initiative. Not enough people know about it. So an extensive public relations program about turning greenery into greenbacks needs to be mounted. USDA could promote the idea at the federal level, especially with Congress, and work with other organizations to communicate the benefits of market-based conservation to state and local constituents.

What the United States does will have global ramifications. The setting and enforcement of standards will influence how the rest of the world will handle these issues. The International Carbon Reduction and Offset Alliance maintains that the first item on the

agenda for self-regulation in the voluntary carbon offset market has to be the establishment of a global code of conduct.<sup>10</sup> But governmental oversight providing formal supervision is needed also. Why couldn't the United States establish a best-practice standard in this instance? And perhaps take the lead in incorporating it into a protocol successor to the Kyoto agreement?

Because protection of natural capital is a global problem, the United Nations could facilitate an international exchange for buyers and sellers to come together, particularly the developing and less-developed countries (LDCs), for whom the financial benefits could be substantial. The UN could also work with LDCs to assess awareness of payments for ecosystem services potential, and assemble landowners and resource users who are interested in the program. Additionally, it could supply the names of third-party professionals in various fields who would (1) provide scientific and technical assistance for measuring and documenting the value of ecosystem services; (2) assist in forging contracts with their negotiating skills; and (3) bring to the table expert verification and monitoring of results.

## Conclusion

There's good news and bad news. The bad news is that humans cause the problem; the good news is that we can solve it...if we act now. The bad news we know; the good news we work for. If human activity has led to the disruption and degradation of the natural environment and impeded the delivery of its services and products, then we must take steps to counteract that. Establishing an office that will at once preserve natural capital and trade its services in the marketplace is one such step....new, untried, bold, innovative, entrepreneurial, waiting in the wings to come on stage.

Human life, human societies, and human economies depend upon the

twin foundations of stability and productivity, that is, on the tradeoffs between nature's proper balance and civilization's dependence upon its products. Too often, productivity is achieved at the expense of stability, as John Holdren and Paul Ehrlich pointed out in a classic 1974 article in the *American Scientist* magazine.<sup>11</sup> Too often, the needs of people take priority over the services of nature. Short term goals of economic development threaten long term goals of sustaining ecosystem services. Wise policy will aim at achieving some sort of equilibrium between human productivity and nature's capacity.

The good news is that many corrective steps have been taken since 1974 by persons and organizations the world over who care about the environment and are determined to build a sustainable planet. The choices we make today about how we use the resources of land and water will determine, for better or worse, the sustainability of tomorrow's ecosystems and the services they provide.<sup>12</sup> One constructive step toward achieving this goal will be the attempt by private and public interests to preserve and harvest responsibly the services of earth's ecosystems. Two rewards will result: the systems themselves will be protected and conserved, enabling the services to continue; and the needs of both buyers (who want the benefits) and suppliers (who own the land or water) will be met. And that's a pretty darn good result! 

## Notes

1. The Food, Conservation, and Energy Act of 2008, Sec. 1245, "Environmental Services Markets," an amendment to Subtitle E of title XII of the Food Security Act of 1985; also, 2008 Farm Bill, Conference Report, 162-163; and excerpts from the 2008 Farm Bill's Managers Report on Environmental Service Markets, 65-66.

2. Statement from the Millennium Ecosystem Assessment Board, "Living Beyond Our Means: Natural Assets and Human

Well-Being," (2005); "Millennium Ecosystem Assessment—Synthesis report for wetlands and water," (2005), 5; "Facts About Rainforests," The Nature Conservancy, <http://www.nature.org/rainforests/explore/facts.html> (accessed 9 December 2009); E.O. Wilson, *The Future of Life* (2002), [http://en.wikipedia.org/wiki/E.\\_O.\\_Wilson](http://en.wikipedia.org/wiki/E._O._Wilson) (accessed 9 December 2009); Juliet Eilperin, "Lawmakers on Hill Seek Consensus on Warming," The Washington Post, 31 January 2007, A6.

3. See Daily, Alexander, Ehrlich, et al. "Ecosystem Services: Benefits supplied to Human Societies by Natural Ecosystems," *Issues in Ecology*, reproduced with the permission of the Ecological Society of America, Washington DC, as found in <http://www.ecology.org/biod/value/EcosystemServices.html> (accessed 9 December 2009).

4. Section 1245 (35) of the Farm Bill of 2008

5. See "Ecosystem Services: A Primer," Ecological Society of America, (2000), <http://www.actionbioscience.org/environment/esa.html> (accessed on 9 December 2009).

6. For example, The Katoomba Group, Ecosystem Marketplace.com, Forest Trends, Conservation International, the Natural Capital Project, EcoSecurities, Global Carbon Exchange, the Center for Capacity Building, the Edinburgh Centre for Carbon Management, the Convention on Biological Diversity, Australian Climate Exchange, and more.

7. Forest Trends, The Katoomba Group, and UNEP; "Primer," 30.

8. For example, The Clean Air Act, the Clean Water Act, the Endangered Species Act, the National Forest Management Act, the Renewable Resources Planning Act, and other laws passed in the last 40-50 years.

9. Federal Register, Vol. 68, No. 89, 8 May 2003, 24753.

10. See <http://www.icroa.org/pdf/POLICY-FRAMEWORK-2008.pdf>; Tom Stoddard, ICROA Co-Chair, "Opinion: Voluntary Carbon Needs Self-Regulation and Global Code of Conduct," The Katoomba Group's Ecosystem Marketplace, 20 March 2009.

11. Holdren, John P., and Paul R. Ehrlich. "Human Population and the Global Environment." *American Scientist* 62(3), (1974): 282-292.

12. See "Primer," Conclusion.