THE WOODS HOLE RESEARCH CENTER

149 Woods Hole Road · Falmouth, MA 02540-1644 USA
Telephone 508.540.9900 · Fax 508.540-9700 · www.whrc.org

Woods Hole Research Center Releases 4 Key Reports to Further REDD Discussions at Upcoming UN Climate Change Conference

As UNFCCC negotiations move towards a powerful new mechanism for compensating tropical countries for their nation-wide reductions of greenhouse gas emissions from deforestation and forest degradation (REDD), several important questions remain: How much will REDD cost? Will it benefit forest people? Is it possible to monitor forests when so many countries are chronically covered with clouds? These and other questions are the topics addressed in four new studies released today by the Woods Hole Research Center in anticipation of the 13th Conference of the Parties of the UNFCCC in Bali, Indonesia.

"These reports represent the cutting edge in ecological, economic, and remote sensing science applied to the crucial task of readying tropical nations around the world for participation in this important new dimension of the UNFCCC," says John P. Holdren, Director of the Woods Hole Research Center.

Center Senior Scientist Daniel Nepstad adds, "These new studies demonstrate that the *annual* cost of slowing deforestation will be quite low but that many decades of payments to tropical countries will be needed, that the potential benefits for forest people are high, and that radar technology is ready to go to scale in looking through clouds to monitor forests."

In "The Costs and Benefits of Reducing Carbon Emissions from Deforestation and Forest Degradation in the Brazilian Amazon," prepared by the Center, the Instituto de Pesquisa Ambiental, and the Universidade Federal de Minas Gerais, one of the region's with the world's largest carbon emission is evaluated. Economic models of potential profits from the expansion of soybeans, cattle, and logging are used to estimate the opportunity costs of bringing deforestation to zero over a ten year period. These economic analyses are compared with a cost accounting of what it would take for Brazil to achieve this deforestation reduction through compensation of forest people, private land forest stewards, and greater institutional capacity to govern the vast Amazon forest region. More than 90 percent of the opportunity costs of forest maintenance could be compensated for a per-ton carbon value of $3, while actually achieving the reduction would be much cheaper: about $1.2 per ton. In the proposed program, all of the region's forest people would double their incomes, and $10 to 80 million per year in fire-related damages would be avoided. These results show that REDD programs will bring substantial benefits to tropical countries that need to be included in evaluations of the economics.

In "Reducing CO2 emissions from deforestation and forest degradation in the Democratic Republic of the Congo," prepared by the Center, a very different forest is analyzed. CO2 emissions from the DRC are low and driven primarily by small-scale farmers, but emissions could escalate rapidly in the future as political stability opens the door to foreign investments and migration. A nationwide assessment of forest carbon stocks and farm family density provides the basis for preliminary estimates of the costs of cutting deforestation by half. When semi-subsistence farmers clear a half-hectare of forest each year to grow the crops that sustain their families, the costs of slowing deforestation must provide for alternative incomes. It will be more expensive to slow emissions from the DRC than from the Brazilian Amazon. However, investments in the management of the timber concession program could provide an important economic incentive to maintain forests standing while generating important revenues.

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"The carbon market represents a lifeline for poor families that have struggled through more than a decade of war in the DRC. If we can tie reducing greenhouse gasses to moving people out of abject poverty, we will really have achieved something," says Frank Merry, economist and co-author of the report on the DRC.

In "New Eyes in the Sky: Cloud-Free Tropical Forest Monitoring for REDD with the Japanese Advanced Land Observation Satellite (ALOS)," the WHRC in collaboration with the Japan Aerospace Exploration Agency (JAXA) presents startling results of the new ALOS radar sensor. From ALOS, high-resolution (20 m) mosaics of radar images can be assembled for very large areas of forests anywhere in the world. Two pilot project areas include a 400,000 km2-region in the southeastern Amazon (the Xingu River headwaters, 7 times the size of Costa Rica), and the 7,500 km2 island of Bali. These cloud-free mosaics were assembled with great speed because of the excellent quality of the images. ALOS data are being gathered by JAXA for all of the forests of the world at least three times each year, providing an important new tool for tracking the state of tropical nations' forests.

Josef Kellndorfer, who is leading the Center's work with ALOS, says, "JAXA has launched an amazing sensor which exhibits unprecedented geometric and radiometric accuracies. Thanks to a dedicated observation strategy, this allows us to obtain wall-to-wall, high-resolution, and cloud-free radar observations of tropical forests several times per year for years to come. With similar instruments planned for launch during the next couple of years by space agencies in Japan, Europe, Germany, Italy, and the U.S., this marks a new era in remote sensing of natural resources."

Finally, the fourth Center study "Ready for REDD? A preliminary assessment of global forested land suitability for agriculture" describes the potential for agricultural expansion into the world's tropical forests driven by sugar cane, soy, and palm oil expansion. This industrial agricultural expansion is already bringing high profits to producers in some tropical countries and could provide an important new driver of deforestation that increases the opportunity costs of slowing deforestation. Five countries (Brazil, the Democratic Republic of the Congo, Indonesia, Peru, and Colombia) contain 75 percent of the world's forested land that is highly suitable for industrial agriculture expansion, as estimated using data on soils and climate. This study also identifies those forests with dense populations of people in them, where the costs of slowing deforestation will only be feasible through development of viable alternative income sources. Forests with low suitability of industrial agriculture and low densities of human residents will be the cheapest to set aside as nations develop their REDD programs.