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The Secret Life of Trees

By Bryan Walsh/Nusa Dua , Friday, Dec. 14, 2007

Aerial view of the Amazon forest next to Manaus, Brazil.
Evaristo Sa / AFP / Getty

Think of carbon dioxide, the main gas that causes global warming, and you'll likely picture a polluting factory in China; neon lights in Tokyo, an SUV sitting in traffic on the freeways of Santa Monica. But while industry, electricity and transportation all add to the greenhouse effect, there's another villain less well known: our forests. Or, rather, the lack of them. Forests, especially in the lush tropics, suck and store carbon, which is released when trees are cut down or burnt. At the current rate of destruction, deforestation is estimated to account for up to 20% of human-caused greenhouse gas emissions. The amount of carbon stored in tropical forests is staggering — Brazil alone has nearly 50 billion tons — and its loss would ensure dramatic climate change. Scientists estimate that without a change in business as usual, more than half of the Amazon forest would be logged by 2030, releasing 20.5 billion tons of CO_2 into the atmosphere.

While there are already international carbon trading schemes that help rich countries pay for reductions in carbon emissions from power or industry in poorer nations, no such mechanism exists for avoided deforestation. That nations are not compensated for protecting their forests has been a huge gap in anti-climate change efforts, and one that has to be resolved if the world is ever to achieve the kind of large-scale reductions in carbon emissions needed to avert catastrophic climate change. "Forests are the elephant in the living room," says Andrew Mitchell, director of the Global Canopy Project and a forestry advocate. "Powerful — but unseen and unrecognized."

At the UN climate change summit in Bali — hosted by Indonesia, home to some of the world's most extensive tropical forests — that's begun to change. Though negotiators still need to work out the details, nations here agreed to put deforestation and forest degradation — the damage of woodlands, which can also release carbon — as a main element of the climate change deal that will eventually succeed the Kyoto Protocol. That will eventually open up a new market that could be worth billions, as industrialized nations that need to reduce carbon emissions could choose to pay tropical nations like Brazil and Indonesia to preserve their own forests. The private market — which has been the engine of forest destruction in the form of logging — could end up saving the trees. "We have to solve this market failure by turning to market

measures," says Mitchell.

That works by putting a market value on standing forests. A tropical forest stores carbon, recycles moisture, provides a haven for biodiversity — but its only monetary value lies in being cut down. "The main trigger behind deforestation is that there's little or no value for standing forests," says Paulo Moutinho, who studies Brazilian forests for the Woods Hole Research Center (WHRC). Put a value on forests in the carbon market, and suddenly it makes sense to leave a tree be, rather than clear it for cheap pastureland. The value doesn't even have to be that high — a new report by WHRC found that it might cost as little as $10 per sq km in some areas to make conservation pay better than destruction. "That's cheap by today's standards," says Daniel Nepsted, a senior scientist with WHRC.

Of course, a market works only if buyers knows they're getting what they're paying for, which requires accurate monitoring of the rate of deforestation. But attempting to track disappearing trees in jungles as vast as the Amazon — where 17 square miles are cut down each day — has long been considered all but impossible. There are also concerns about "leakage," the possibility that if one paid for a project to save trees in one area, logging would simply move to another, unprotected forest — and the saved CO2 would leak. But new space imaging, much of it done by the Japanese Land Observing Satellite (ALOS), can collect precise data on the rate and type of deforestation, even through clouds — pretty important, given that the Amazon alone recycles trillions of tons of moisture every year. And leakage can be avoided by assigning countrywide baselines for deforestation — a kind of emissions cap for forestry — so that projects can be judged on a national level; ensuring one patch of logging can't be replaced with another. Though the details still need to be worked, it looks like that's the sort of scheme that seems likely to emerge out of the Bali discussions.

As valuable as tropical forests may be to the world as a carbon sink, however, they matter even more to the people whose lives and livelihoods depend on them. Some environmentalists fear that a rush to cash in on forest conservation could end up hurting the indigenous people — whether the rubber tappers of Brazil or the forest dwellers of Aceh — that it should benefit most. After all, history has not been good to native people in the developing world who dwell on suddenly valuable land. The key will be to manage avoided deforestation projects properly, to make sure they are truly win-win. "The value of a forest is not only carbon sequestration, but biodiversity, and the lives of those in the forests themselves," says Manuel Silva de Cunha, president of the National Council of Rubber Tappers in Brazil. (Listen to Silva de Cunha talk about avoided deforestation on Greencast.) "We can't just forget those principles." If the Bali process works, the world may follow a new — and better — set of principles.