

## Brazilian companies gear up to make biodiesel

Rio de Janeiro, Brazil

**B**razil's alternative-fuels sector is setting its investment plans in motion following the enactment of a new law requiring that bio-fuel be added to all diesel sold in the country starting in 2008.

"[The law] has prompted us to invest in biodiesel because of the guaranteed market," says Claudio Tonol, coordinator of new projects for Granol, a Brazilian soy-oil company preparing to produce biodiesel. "Without that requirement, our biodiesel project would still be under study."

Enacted by the Brazilian Congress in

January, the new law authorizes the voluntary sale of diesel containing 2% bio-fuel through 2007. But by 2008, this mixture—called B-2 biodiesel—must replace conventional diesel, the legislation says. And by 2013, B-2 biodiesel must give way to B-5 biodiesel, a mixture containing 5% bio-fuel. (Sales of B-5 will be allowed on a voluntary basis from 2008 through 2012.)

The government of President Luiz Inácio Lula da Silva had proposed a bill in December simply allowing voluntary sale of B-2 biodiesel, but Congress added the mandatory phase-in of

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## Lake cleanup becomes matter of national pride

Guatemala City, Guatemala

**G**uatemalan President Oscar Berger launched a plan late last month to clean up picturesque but highly polluted Lake Amatitlán, the first of seven so-called mega-projects he hopes to inaugurate while in office.

The project, being carried out with a US\$29 million loan from the Inter-American Development Bank (IDB), aims to save the lake in five years. But it also is intended as a first step toward two more ambitious goals—to upgrade Guatemala's largely unregulated sewage and industrial liquid-waste system and to secure a new water source for the Guatemalan capital, where demand exceeds supply.

The six-square-mile (15-sq-km) lake, ringed by mountains and in view of volcanoes, was once an idyllic weekend getaway for city dwellers, lying just 17 miles (28 kms) south of the capital. Today, however, it is the destination of roughly half of the sewage and liquid industrial waste in Guatemala department, the jurisdiction encompassing metropolitan Guatemala City. Some 95% of this waste enters the lake untreated, carried by the Villalobos River and settling in a dense, black sludge.

Government officials say levels of lead, mercury, arsenic and cyanide in the Villalobos far exceed globally accepted standards. In

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A floating harvester already is cleaning up water hyacinths and garbage in Lake Amatitlán. (Photo by Catherine Elton)

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Coverage of Latin American environmental issues for international businesses, NGOs and public agencies.

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### Pro-GMO agency in Brazil is given licensing powers

Brazil's Congress has passed a controversial bill giving licensing power over genetically modified organisms (GMOs) to a pro-GMO technical body.

The legislation opens the door permanently to transgenic farming in Brazil by allowing the sale of gene-altered seeds.

Many in the legislative and executive branches objected to the measure because it runs counter to an earlier version of the bill, proposed by the administration of President Luiz Inácio Lula da Silva, that would have put final licensing decisions in the hands of the Environment Ministry and two other ministries.

But this month the amended bill won final approval by a wide margin in the lower house of Congress, and the president is expected to meet a 45-day deadline for signing it.

The bill creates a National Bio-Security Council consisting of 11 cabinet ministers, who will set overall transgenic policy. It also empowers an existing body with a record of favoring transgenics, the National Technical Commission for Bio-Security (CTNBio), to review and approve applications for licenses to sell gene-altered seed and other GMO products.

As initially proposed, the legislation authorized CTNBio to review and provisionally approve GMO-license applications. It gave final approval power to the Agriculture, Health and Environment ministries, which in making their decisions would be able to

request follow-up studies on environmental or health risks. (See "Brazil's transgenics bill greeted cautiously" — EcoAméricas, Nov. 2003).

But the Brazilian Senate, where Lula's leftist Workers' Party (PT) has less clout than it does in the lower house, revised the bill in October, removing licensing authority from the ministries and assigning it to CTNBio.

Then the lower house, called the Chamber of Deputies, approved that version of the bill on March 2 by a 352-to-60 margin. Analysts say it did so because on final consideration, the legislation was attached to a popular measure providing for stem-cell research, thus attracting the votes of lawmakers who nevertheless objected to the transgenic-oversight provisions.

The outcome drew heavy criticism from PT members, environmentalists, consumer advocates and even Lula's Environment Ministry. "Giving the CTNBio definitive licensing power...creates a serious GMO-decision-making imbalance that prevents taking precautions needed to deal with technologies whose impacts on the Brazilian ecosystem have yet to be identified," the Environment Ministry said in a written statement. "So this ministry feels obliged to warn of the potential environmental risks created by the law."

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### Scientists decry Petrobras plan for Ecuador roadway

Plans by Brazilian oil company Petrobras' to start building a road this month in Ecuador's Yasuní National Park have drawn criticism from scientists around the world.

The 12- to 14-month project is part of Petrobras' effort to tap oil reserves in Block 31, a concession area in the northeast Ecuadorian Amazon province of Orellana. Some 70% of the 500,000-acre (200,000-ha) area is in Yasuní Park, known for its copious plant and animal life as well as its indigenous huaorani Kawimén people.

Petrobras and government officials insist that the road would only be open to oil-project personnel and would not be linked to the national road system. But the plan still has drawn heavy criticism from scientists who argue the road will act as a conduit for destructive hunting and settlement.

In November, a group of 59 scientists from 15 countries including Denmark, Ecuador, Germany, Greece, Spain, the United Kingdom and the United States called on the governments of Ecuador and Brazil to halt the project.

Then last month, eight scientists including Jane Goodall and Edward O. Wilson wrote Ecuadorian President Lucio Gutiérrez, while six other scientists from the Smithsonian Institution wrote Petrobras executives in Brazil.

Both letters warned that the road could do irreversible ecological damage to what they described as one of the most important tropical rainforests in the world. They called for consideration of a no-roads policy that would "maintain the biological and environmental integrity of the area."

The November letter, sent also to the head of Petrobras and the director general of the

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# Kyoto start spurs interest in carbon market

Bogotá, Colombia

**W**ith the Kyoto Protocol now in force, Latin American countries are eager to see how strongly the climate-change treaty will spur carbon trading—the buying and selling of emissions-reduction credits.

The protocol only limits greenhouse-gas emissions for the 37 developed nations that ratified the treaty. But it allows these countries and companies based in them to meet their targets in part by purchasing carbon credits from each other and—under a special program outlined in the protocol—from developing nations. It's the trading of credits under this special program, called the Clean Development Mechanism (CDM), that Latin governments hope will stimulate green investment in their countries.

Emissions trading among Kyoto participants and the purchase of CDM credits both have accelerated since Russia announced in September it would ratify the treaty. Russian ratification gave the 1997 treaty the final measure of international support it needed to take effect, prompting its Feb. 16 implementation.

Says Martha Castillo, head of Colombia's CDM office: "Demand for [CDM projects] is up, prices for emissions-reduction credits are up and there's ever-greater optimism in Latin America and the rest of the developing world that Kyoto will stimulate green projects."

## EU makes it real

Adding to the carbon market's growing vigor was the Jan. 1 start of a mandatory European Union emissions-trading scheme. The EU system, which expressly recognizes credits based on CDM projects, was set to start whether or not the Kyoto Protocol took effect.

"Last year, the European Emissions Trading Scheme made [carbon trading] real to a lot of people," says Marc Stuart, a co-founder and director of EcoSecurities, a U.K.- and U.S.-based firm that develops and finances CDM projects. (See Q&A, this issue.) "All of a sudden there was a lot of activity in the market."

Meanwhile, multinational companies have stepped up efforts to survey carbon emissions from their plants around the world. Says Stuart: "They're doing this not from the perspective of liability, which is fully understood in Europe and Japan, but by asking, 'What kind of assets do we have that could economically reduce emissions and thus take part in the trading market?'"

Experts say one factor boosting interest is the approval last year of dozens of new projects by the CDM executive board, which oversees emissions-credit sales from developing to developed countries under the Kyoto Protocol. This has given project developers a clearer idea of what the board will accept. With investors more confident their money will not go to

waste, CDM-credit prices have climbed from an average of US\$4 per ton of CO<sub>2</sub> a year ago to an average \$7 today, analysts say.

"We have a sellers' market forming," says Jorund Buen, director of Point Carbon, an Oslo, Norway consultancy that forecasts all carbon trading worldwide could rise from US\$450 million today to over \$47 billion by 2010. "Demand is increasing and prices will climb."

Previously, carbon trading had proceeded at a snail's pace—partly because the protocol, which requires participants to cut their greenhouse gas emissions an average 5.2% below 1990 levels by 2012, had seemed stuck in limbo. But with the treaty now implemented and the European trading system underway, the market has become more dynamic.

## More corporate buyers

The CDM is a case in point. A year ago, the only large-scale buyers of CDM credits were the Dutch and Japanese governments and various World Bank funds. They paid rock-bottom prices because they took on the risk that the Kyoto treaty might never be ratified. But today, over a third of buyers are corporations eager to line up CDM greenhouse-mitigation projects.

The demand was evident at December's 10th annual Conference of Parties to the United Nations Framework Convention on Climate Change (COP-10) in Buenos Aires. "On one panel, you'd have 12 representatives from the European Union asking project developers to come forward with ideas, and on another panel representatives of nine different carbon funds similarly looking for investment opportunities," says Point Carbon's Buen. "You don't have to bang on doors anymore to sell credits."

Though carbon trading clearly is brisker, however, it is not booming. Project developers complain that getting greenhouse mitigation work approved by the understaffed and underfunded CDM executive board still can be excruciating, limiting the supply of projects.

And some worry Russia might depress carbon prices by selling much of its estimated US\$10-billion surplus in emissions allowances. Russia has a surplus because industrial contraction following the Soviet breakup drove its greenhouse-gas output below its Kyoto targets, which were set based on its 1990 emissions.

But others believe the carbon market only will strengthen. If so, Latin America, which has supplied half of the 200 to 300 clean-energy projects in the CDM, would seem to be in a good position to benefit. Says Colombia's Castillo: "I believe this will be a good year for greenhouse mitigation in Latin America."

—Steven Ambrus

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# Conservation effort targets Osa Peninsula

Osa Peninsula, Costa Rica

**C**orcovado National Park on Costa Rica's Osa Peninsula boasts species similar to those of the Amazon rainforest and is considered one of the most biologically diverse places on earth. At first glance, the park seems to host a healthy, symbiotic relationship between man and nature.

But looks can be deceiving.

Corcovado, which occupies approximately half of the 250,000-acre (100,000-ha) peninsula, has for decades been a site of conflict. Illegal gold miners, loggers and poachers have wreaked havoc on its delicate ecosystem, causing habitat fragmentation and destruction that has reduced animal populations to alarming levels. The population of jaguars [*Panthera onca*] in Corcovado has reached an all-time low.

"A decade ago, we had 200 individuals in the park," says Roberval Almeida, a jaguar researcher with Covirena, a Costa Rican environmental group. "Today, there are between 20 and 30 of the felines left."

To help reverse this trend, the U.S.-based Gordon and Betty Moore Foundation has made a US\$7.994 million grant to The Nature Conservancy (TNC), a non-governmental organization headquartered in Arlington, Virginia. The funds are earmarked for a variety of conservation efforts in the Osa region, which is located in southwestern Costa Rica.

## Part of larger effort

TNC is executing the project as part of the Osa Campaign, a broader conservation and fundraising effort involving the Conservancy, Conservation International, the non-governmental Costa Rica-U.S. Foundation for Cooperation (Crusa) and the Costa Rican Environment and Energy Ministry.

"This is a special opportunity for us to make an impact," says Adrian Forsyth, the Moore Foundation's director for biodiversity science. "Osa is a globally significant area [for biodiversity]. There are 360 species that we know of that are endemic to the area, making Osa the most important location in Mesoamerica, and one of the most important in the world."

Poaching of jaguar prey such as the white-lipped peccary (*Dicotyles pecari*) coupled with fragmentation of the jaguar's habitat has forced the felines to cover more territory in search of food. Sometimes in that search, the jaguars run afoul of humans.

"They wander onto a farmer's land and kill cattle and dogs," says Almeida. "They kill the farmer's livelihood, and in turn the farmers shoot [the jaguars]."

Almeida reports finding eight to 10 dead jaguars shot on farms each year. He fears the cat's current numbers are dangerously low,

nearing the level that would make natural population increases impossible.

Forsyth, however, argues it is not too late. "If we come in and act now, wildlife populations can rebound," he says.

While the jaguar may be the highest-profile animal in the area, the Osa Campaign is working to restore the integrity of the area's entire ecosystem.

"It's not just about protecting the jaguar," says Javier Mateo, director of TNC's Osa Site Program. "The loss of the jaguar is just one way of showing the threats to the region's natural systems. We should be looking at the system as a whole and not at a single species."

## Social dimension, too

The Moore Foundation donation is driving a multi-faceted, three-year conservation project that officially got underway in December. "We are interested in developing a landscape that is biologically functional, and that should serve as a platform for both social and economic development in the region as well," Mateo says. "We are trying to make biological development compatible with development in general."

The Osa Campaign's initiatives include hiring 67 new staff members for the Osa Area of Conservation, which includes 20 new park rangers for Corcovado. "All [new rangers] will be from the area, and we want to help to incorporate former hunters, loggers and miners," Mateo adds. "We hope to take people who were a threat to the region's biodiversity conservation and make them an asset to it."

Another goal of the Osa Campaign is to develop a biological corridor to Piedras Blancas National Park, which is just off the peninsula, some 75 miles northeast. This would give the jaguar and other animals access to both national parks. Other aspects of the project include the drafting of land-use plans for the municipalities of Golfito and Osa, training and equipping employees, strengthening community outreach programs, buying land for conservation and establishing a biological monitoring program.

Though the goal is to protect the Osa Peninsula as a whole, project organizers acknowledge that saving the jaguar is a particularly important factor in the region's conservation equation.

"If we lose the jaguar, we lose a big part of Costa Rica's mystique," Forsyth says. "People go to Costa Rica because they believe it's full of protected wildlife, and if you have something as high-profile as the jaguar go extinct, it sets the country back as a whole."

—Pete Majerle

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# Gas subsidies play part in Venezuelan smog

Caracas, Venezuela

**M**any problems underlie this city's ubiquitous tailpipe pollution and traffic congestion. Among them are inadequate public transport, chaotic development, non-existent enforcement of vehicle-emissions standards and a near-total lack of carpool lanes (just one in all of metropolitan Caracas).

But a crucial, often-overlooked factor, experts say, is the heavy government subsidization of gasoline prices. Thanks to subsidies, leaded gas here costs the equivalent of 10 cents a gallon and unleaded gas sells for some 13.5 cents a gallon. These artificially low fuel costs encourage wide automobile use—and make it more feasible to drive low-mileage, pollution-prone vehicles ranging from jalopies to SUVs.

Yet oil-rich Venezuela's cheap-gasoline policy is popular both among the affluent, who receive a disproportionate share of relief, and the poor, who fear higher fuel costs would boost bus fares and food prices. Talk of adjustment can set the political alarm bells ringing.

Visiting Brazil last October, the president of Venezuela's state oil company at the time observed fuel in his country "is almost given away." Petroleum of Venezuela (PDVSA) President Alí Rodríguez went on to suggest the retail price should be increased to cover the cost of production. With regional Venezuelan elections approaching, government officials back in Caracas scrambled to contain the damage. Communications Minister Andrés Izarra said Rodríguez's comments had been "taken out of context," adding that the possibility of a fuel-price increase already had been discarded. "We want to reject that emphatically," he said.

## Cheap... and cheaper

The retail fuel price—70 bolivars per liter for leaded gasoline and 97 bolivars for unleaded—has been frozen for six years, a period in which the bolivar has plummeted against the dollar and lost still more value to inflation. Just this month, the government devalued the bolivar on the official market by 12%.

The result is that in real terms, gasoline has become astonishingly cheap. A liter now costs less than a photocopy, while a gallon can be had for less than the price of an egg. The fuel is so cheap that push-cart food vendors here use mobile, gasoline-powered generators for cooking and refrigeration. Other street entrepreneurs run gasoline-fueled generators to power mobile card-lamination shops.

Analysts say the subsidies directly cost the government more than US\$500 million a year. They also point to opportunity costs. Higher prices and less consumption at home, for instance, would leave Venezuela with more oil to sell abroad—and thus more earnings to

invest in such areas as mass transit, health and law enforcement. And added income from higher-priced domestic sales would yield still more funds for such investments.

The government certainly is aware of the role of gasoline subsidies in excessive and environmentally harmful energy use. A 2002 study by the Venezuelan National Assembly's Office of Economic and Financial Consulting (Oaef) reported that Venezuela has one of the world's highest levels of energy consumption relative to GDP, and that its per-capita CO<sub>2</sub> emissions were more than triple the average for developing nations and more than double the average for Latin America.

The study said the richest 20% of Venezuelans receive 6.5 times more of the gas subsidy than the poorest 20%, and it pegged the combined costs of traffic congestion and air-pollution health impacts at one-tenth of a U.S. cent for every liter of gas sold.

In Indonesia and Chile, the study said, fuel taxes have brought "great benefits" by helping cut sulfur and particulate pollution and discouraging the use of inefficient vehicles. By eliminating both the fuel subsidy and a smaller subsidy for electricity, Venezuela could triple the budgets of the ministries of health, education and social development, the report found.

## Indexing abandoned

Venezuela has raised gasoline prices in times of fiscal crisis, but politicians are mindful that economic adjustments in 1989—which included a fuel-price increase—triggered huge riots in which hundreds died. During the late 1990s, then-President Rafael Caldera successfully indexed gasoline prices to inflation. On taking office in 1999, however, current President Hugo Chávez froze fuel prices.

Despite its popularity with the public, the freeze has caused strains. As the bolivar has sunk in value, for instance, gasoline-trucking and filling-station operators have pushed for a bigger share of fuel-sales income. Yielding to this pressure in December, PDVSA announced it would cut its share of gasoline-sales income by 28%. The move added 8 billion bolivars a month (approximately US\$3 million) to government gas-sales losses, officials say.

Though the fuel subsidy's impacts do not get much attention here, some critics are sounding the alarm. José Moya, president of the Federation of Environmental Organizations of Venezuela (Forja), says the subsidy violates the sustainable-development clause of Venezuela's Constitution. Says Moya: "The gasoline subsidy is the enemy of sustainable development."

—Mike Ceaser

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## Centerpiece

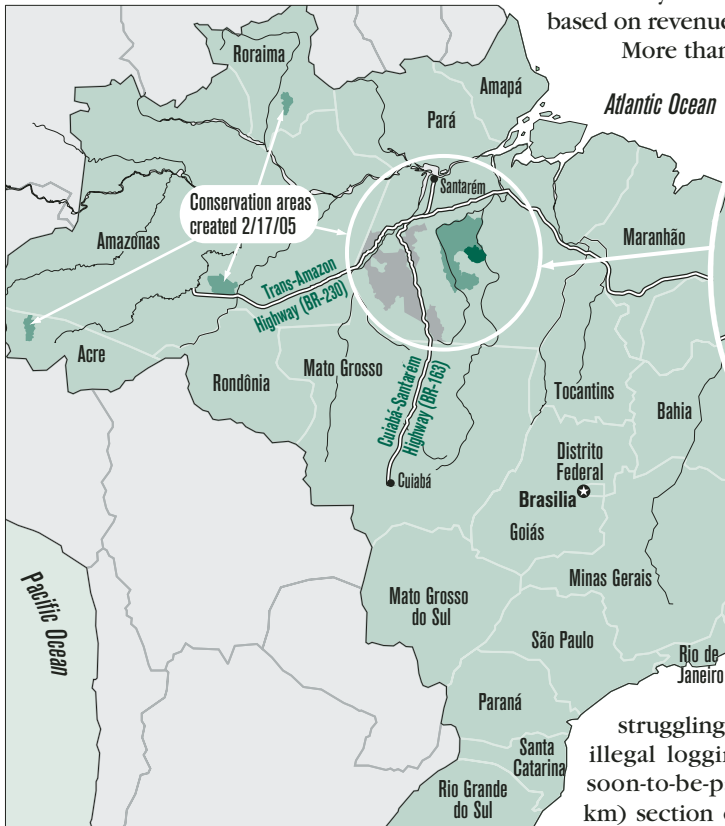
# Will Brazil's new reserves be protected?

Rio de Janeiro, Brazil

**D**ays after the high-profile murder last month of Sister Dorothy Stang, an American-born nun who promoted sustainable use of the rainforest in the eastern-Amazon state of Pará, the Brazilian government unveiled a pair of initiatives of which Stang would likely have approved. First, it earmarked 12.8 million acres

these paper plans to protect the Amazon with special, guaranteed money that is immune to budget cuts," says Fernando Gabeira, a Green Party member who is a leading environmental advocate in the Brazilian Congress. "So whether these protected areas will have the funding they need to safeguard them is something that's decided on a year-to-year basis,

based on revenues." More than



(5.2 million has) of rainforest land for conservation, the bulk of it in Pará. Then it reserved an additional 19.7 million acres (8 million has) of Pará rainforest for sustainable development.

The set-asides, the result of a two-year planning effort by the government of President Luiz Inácio Lula da Silva, cover an area that, taken together, is bigger than the U.S. state of New York.

Coming just five days after Stang's Feb. 12 murder, the government moves received wide media attention. But they also have raised a question that too often overshadows such initiatives: will Brasília provide the enforcement money and manpower needed to ensure the forestland is truly protected?

Green advocates have their doubts. "The government hasn't backed up

90% of the land that was set aside is in Pará state, where the government is struggling to curb land grabs and illegal logging on both sides of a soon-to-be-paved, 704-mile (1,174-km) section of the Cuiabá-Santarém Highway (BR-163). This unpaved stretch of BR-163 is slated to be asphalted next year so farmers, most of them soy producers, can get their crops from western Brazil to the Pará state port of Santarém for shipment to foreign markets. Currently, seasonal rains from December to May often leave that part of the road impassible.

Soon after the paving of BR-163 was agreed on in 2002, land grabs—often involving forged or otherwise illegal land titles—surged in the region. To address the problem, the government last year unveiled plans for conservation areas on both sides of the highway as part of a three-year, US\$136 million project to establish land-use controls, promote sustainable development and bolster Amazon forest monitoring and enforcement. (See "Brazil launches Amazon forest-protection steps," EcoAméricas, April '04.)

The cornerstone of the government's new Pará policy is the forest-protection initiative announced last month. The 12.8 million acres (5.2 million has) in new conservation lands are located in Pará, Amazonas, Acre and Roraima states, with 75% of them contained in two contiguous reserves in Pará state on the eastern side of BR-163.

The bigger of the two Pará reserves, an 8.4-million-acre (3.4-million-ha) swath called Middle Land, is the largest Amazon reserve land ever created in Brazil. It is to be used



Illegal clearing such as this abounds in Pará state, the f

exclusively for biological research. The other reserve is designated as a national park named Serra do Pardo. The 19.7-million-acre (8-million-ha) expanse earmarked for sustainable uses, meanwhile, is subject to a six-month ban on development while plans for it are finalized.

Tasso Azevedo, the Environment Ministry's director of forests, expects 70% of this land will be opened to sustainable logging once legislation creating a new system of private logging concessions clears Congress. Most of the remaining 30% of the acreage, he says, is local-community land



that likely will be designated as extractive reserves—areas in which residents are supposed to engage only in environmentally sustainable economic activities.

Officials plan to pay for start-up of the new initiatives by tapping some of the US\$73.4 million that the German and Brazilian governments, the World Bank's Global Environment Facility (GEF) and the World Wildlife Fund (WWF) pooled for such efforts in 2003 in so-called Amazon Region Protected Areas (Arpa) funding. Initial monitoring and enforcement, they add, will be funded with some of the US\$136 million earmarked for Amazon forest-conservation last year. However, critics such as Gabeira of the Green Party say failure to identify recurring revenue sources could doom the new protected areas.

Environmental groups, while welcoming the government initiatives, also need convincing. "[J]ust how well it will be



ocus of last month's land set-asides. (Photo by Bernd Radowitz)

implemented depends on the same old question, how much money and manpower Ibama [Brazil's environmental enforcement agency] will have not just this year and next, but permanently," says Adriana Ramos, public policy coordinator with the Socio-Environmental Institute (ISA), a leading green group here. "Ibama is traditionally too understaffed and underfunded to protect even the most critical areas of the Amazon. And this [initiative] just adds to Ibama's protection responsibilities."

Says Paulo Adário, Amazon coordina-

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## Factoring people into Amazon conservation

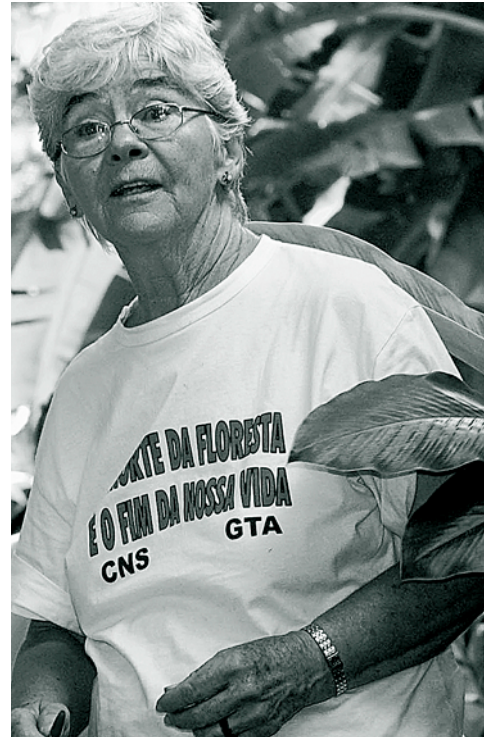
Rio de Janeiro, Brazil

**E**nvironmentalists in the Amazon frequently assert that forest conservation must go hand in hand with sustainable-development initiatives for poor settlers. Indeed, they often place the well-being of people before that of trees—a ranking some green advocates in industrialized countries find hard to accept, given the rapid destruction of the world's largest tropical forest.

Chico Mendes, who became the first widely known rainforest martyr following his murder in 1988, was no exception in this regard. His struggle against large landowners in the western Amazon state of Acre was primarily a fight for the survival of his fellow rubber tappers, who wanted to keep the forest intact mainly so they could continue to make a living from it. Dorothy Stang, the American-born nun murdered last month in the eastern Amazon state of Pará—allegedly on the orders of one or more farm and timber operators—waged a similar battle.

I met Stang a little over two years ago in Anapú, the Pará municipality where she lived and died, while I was researching an EcoAméricas article on deforestation. (See "Brazil conflicted over road-paving plan"—EcoAméricas, June '03.) She made clear that from her perspective, environmental protection should by no means be the only factor in the Amazon-conservation equation. "We want the small farmers to have a life with quality, not just subsistence farming," she told me.

Since the early 1970s, Stang fought on behalf of poor, rural residents of Pará who in most cases had migrated from Brazil's northeast to the Amazon to escape poverty and hunger. The military regime that ruled Brazil from 1964 to 1985 encouraged such migration by cutting thousands of miles of roads through thick Amazon rainforest and promising to "give men without land a land without men," while completely ignoring environmental concerns. Along a 1,550-mile (2,500-km) section of the Trans-Amazon Highway that was completed in 1972, the government distributed 250-acre (100-ha) parcels of land to settlers. Most land was handed out by Brazil's land-reform institute, Incra, without financial and technical assistance or accompanying health and education infrastructure. Consequently, in Anapú and most other towns along the



Dorothy Stang (AP/Wideworld Photos)

highway, a functioning economy based on small farming failed to develop.

Yet migration continued apace. While in the early stages only about 6,000 families settled along the Trans-Amazon, ongoing settlement in the 1980s and 1990s boosted the number of families in the highway corridor to 30,000. Many newcomers lacked documentation establishing clear title to the land. At the same time, timber companies—and more recently, cattle ranchers and soy farmers—have exploited the mix of questionable ownership status and scant law enforcement to seize land and engage in illegal forest clearing. The settlers have remained in the region, but are viewed as obstacles by many in the timber and agriculture sectors. The resulting tension often fuels violence in the region, and many believe it led to Stang's assassination.

Rural unions and organizations such as the Pastoral Land Commission (CPT)—a Catholic Church-backed organization Stang belonged to—have responded by teaming up with environmental groups to fight for agro-extractive reserves. The idea behind these reserves, which were first championed by Chico Mendes, is simple: families earn a living and preserve the rainforest by engaging only in sustainable activities such as rubber tapping, low-impact logging, fruit and nut gathering and shade cultivation of

continued on page 8 ♦

Reserves, continued from page 6**Contacts****Paulo Adário**

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tor for Greenpeace in Brazil: "Given that land speculators already have invaded both sides of BR-163, especially the eastern side, does Ibama have the funds and field agents to dislodge them and keep them from coming back? The protected areas on both sides of the highway need constant monitoring, and that is costly."

Flávio Montiel, head of environmental protection at Ibama, defends his agency's ability to police protected lands. He says some of the \$136 million in already-appropriated forest-protection funds will be used this year to build 19 bases for Ibama agents in the so-called Deforestation Arc, a swath of 60 municipalities in the Amazon states of Pará, Mato Grosso and Rondônia, where rainforest destruction is severe. Says Montiel: "These bases bring Ibama agents closer to the scene of illegal logging and other such crimes more quickly."

José Maria da Cunha, the Transport Ministry's project director, agrees. "To protect the forest on either side BR-163 from illegal land grabs and logging doesn't require a huge monitoring effort," he says. "It just requires a permanent one that's closer to the area where such activities occur."

Stang, continued from page 7

certain crops. Together with national parks and Indian reservations, extractive reserves are meant to serve as a barrier against Brazil's rapidly advancing deforestation frontier, an idea that appeals to environmentalists worldwide.

Stang worked to ensure that the extractive reserves promised on paper became a reality on the ground for the small farmers she assisted in and around Anapú. A kind and uncomplicated woman, she would warmly receive the poor farmers who visited her in a wooden community center near the town's Catholic church to ask for small favors, or to report the latest news on land grabbing in the region. During my stay in Anapú, I discovered through my reporting that for poor, illiterate residents of isolated shanty towns persevering in the forest without government protection, Stang's grassroots activism provided virtually the only defense against advancing logging, ranching and farming interests.

With only lukewarm support from Brazil's federal government, nearly no backing from the Pará state government and open resistance from Anapú's municipal council and mayor, the CPT and other local non-governmental groups sometimes tried to take matters into their own hands. They encouraged hundreds of families to occupy lands that before 2003 had been earmarked to become extractive reserves, but had

Montiel adds that the 360 Ibama field agents now patrolling the Amazon would this year be reinforced by 90 agents reassigned from less environmentally sensitive areas. Ibama agents also will be accompanied on occasion by federal police and are scheduled to receive logistical support from the army.

Meanwhile, Ibama expects to benefit from improved satellite and radar monitoring of Amazon forestland. While the agency used to rely solely on purchased images from a U.S. Landsat satellite, for instance, it now receives images free-of-charge from a joint Brazilian- and Chinese-owned CBERS-2 remote-sensing satellite launched last October.

"Because we no longer have to pay for satellite images or go through the red tape of buying them, we're using four times more CBERS images than Landsat images to detect anomalies in the Amazon forest cover," says Edward Elias Junior, head of Ibama's remote-sensing department. "This will help protect the entire rainforest, and especially the critical areas like the one around BR-163."

—Michael Kepp

never officially been designated as such due to resistance from farming and timber interests. Stang knew the risks in a state that, according to the government, was the site of 20 of the 60 killings rooted in land conflicts in Brazil last year. (The CPT, for its part, says 521 killings of rural workers took place in Pará from 1985 to 2003, out of a total of 1,349 nationwide.)

One man, who along with his family had to abandon land they'd settled under a CPT-sponsored project, told me how he was forced away by 15 pistoleros hired by a logger. He asked that he not be named in the article. "If my name appears, I have a 90% chance of being killed," he said. Then, as now, the climate of fear in Anapú was ever-present. Aware of the danger of drive-by shootings, Stang and other activists took care, for example, never to sit with their backs to the street in a small Anapú diner that faced the main street. They told me to avoid being seen by anyone when taking pictures of sawmills around Anapú. And they declined to accompany me in that reporting, explaining it would be extremely dangerous to be spotted with a foreign journalist.

"We have a lot of threats here," Stang told me, with a mixture of fear and determination. "Our lives are all threatened."

—Bernd Radowitz



**Biodiesel**  
*continued from page 1*

B-2 and B-5 in a bid to jump-start demand for biodiesel and help curb air pollution.

"Congress decided to put teeth into the government's measure," says Ricardo Dornelles, general coordinator for renewable fuels at the Mines and Energy Ministry. "Now that the private sector knows there's going to be guaranteed sale of the product, they'll more readily invest in producing it."

The biodiesel slated to come on the market consists of conventional diesel and a percentage of bio-fuel made from vegetable and seed oil using a sugarcane-based ethanol reagent, or catalyst. Brazil has an ample supply of biodiesel raw materials: it is the world's second-largest producer of soy and the largest producer of sugarcane-based ethanol.

The bio-fuel, called B-100 biodiesel, is expected to be made mainly by vegetable-oil producers. Distributors will buy it, mix it with regular diesel and sell the B-2 (and eventually B-5) blend to gas stations, says Antonio Carlos Ferreira Batista, a researcher at the University of São Paulo's (USP) biodiesel program.

Batista forecasts that by 2008, when B-2 biodiesel sales become mandatory, producers will have to turn out B-100 at a rate of 211 million gallons (800 million liters) annually to supply the market adequately.

**Industry responds**

Not surprisingly, the investment pace is picking up. Granol, Brazil's sixth largest soy-oil company, has taken a cue from the new biodiesel law to invest in a plant capable of producing 26.4 million gallons (100 million liters) of B-100 annually, says Tonol. The plant is expected to start operations in 2007 or 2008.

Grupo Agropalma, Brazil's largest palm-oil maker, is bringing a US\$1 million plant on line next month to process fatty-acid waste from palm-oil operations into B-100. Agropalma plans to produce 6.5 million gallons (25 million liters) annually by 2008, selling 90% to biodiesel distributors and keeping the rest to run the company's vehicles, generators and boilers, says Marcello Brito, the commercial director.

Some companies outside of the agri-business orbit are preparing to make biodiesel, too.

Petroplus, a Brazilian fuel-additive maker partly owned by the U.S. company STP, is spending US\$35 million on a biodiesel plant in western Mato Grosso do Sul state, where officials have promised tax breaks. The plant, slated to start up next year with an annual capacity of 30.3 million gallons (115 million liters), will produce B-100 biodiesel for both domestic sale and for export. Petroplus says it will make the fuel using oil from soybeans it buys and from the seeds of castor trees it plans to grow.

"The law requiring B-2 biodiesel by 2008 helped us decide to invest in biodiesel," says Petroplus President Paulo Bonadia. "But so did international market interest in the fuel and our interest in producing clean energy."

A Brazilian capital goods producer, Dedini S.A. Indústrias de Base, is hoping to tap the growing demand for biodiesel plants and equipment. Its first sale was to Agropalma, and it has given price quotes to Petroplus, which also is negotiating with French and German capital-goods makers.

**Forty quotes**

José Olivério, Dedini's vice president of operations, says he has given 40 price quotes to Brazilian companies interested in producing biodiesel. Olivério expects to sell 15 biodiesel plants to vegetable-oil and ethanol producers, farmers and other potential investors between now and 2008. He estimates their average capacity will be 12.6 million gallons (48 million liters) a year. "Without doubt, the [new law] will stimulate investments in this sector," he says. "If Congress had made B-2 a voluntary fuel as the government wanted, we wouldn't be sending out nearly as many quotes."

LBH do Brasil, the local arm of a Dutch logistics company and shipping agent, also has consulted Dedini and might invest in biodiesel. But Sergio Maia, LBH's general manager in Brazil, notes that profits are by no means assured—especially for companies that aren't vegetable-oil producers. "Currently, the price of soy oil is a bit higher than the price of diesel oil, so to be price-competitive a biodiesel producer would need to produce soy oil or make it from a cheaper vegetable oil," Maia says.

Miguel Dabdoub, head of USP's biodiesel program, says a petrochemical entrepreneur who declines to be identified has built a US\$7.5 million biodiesel plant in São Paulo state using technology developed at USP. The plant, which can make 28.5 million gallons (108 million liters) of soy-based B-100 annually, was built well in advance of Brazil's new law because its output is intended initially for Europe, where the biodiesel market is relatively strong.

Dabdoub forecasts B-5 biodiesel will reduce greenhouse-gas and sulfur emissions from Brazil's diesel vehicles by 7.5% and 17.7%, respectively. Diesel cars and trucks account for 25% of Brazil's vehicular emissions, he adds.

Says Batista, Dabdoub's USP colleague: "Because the fuel that will replace conventional diesel has a bio-component that is renewable and non-polluting, it contributes to sustainable development and improves quality of life."

—Michael Kepp

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## Lake Amatitlán continued from page 1

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addition to receiving sewage and hospital, agro-industrial and factory waste, the lake gets a 1.5-million-ton annual dose of sediment, much of it the result of unregulated sand-mining along the Villalobos. Some 750,000 cubic meters of garbage a year also enter the lake, mostly during the rainy season.

Nutrients in the waste have promoted the aggressive growth of water hyacinths (*Eichornia crassipes*), which have covered much of the lake's surface, while sedimentation has starved the lake of oxygen. The river's contamination is believed to be the source of skin, digestive and respiratory problems for residents living near the lake.

Government officials say the cleanup, beyond its crucial environmental and health goals, has become a matter of Guatemalan dignity and pride. The lake's decline has its roots in a 1976 earthquake and over a decade of rural political violence that together spurred massive internal migration to Guatemala City. The capital began closing in on Lake Amatitlán as low-income neighborhoods, factories and businesses consumed farmland that once separated the water body from the city.

As water pollution and odors worsened, weekend-home owners abandoned their houses—but not their efforts to save the lake. The Lake Amatitlán Committee, which formed in 1973 and has some 150 members has lobbied numerous administrations. “We saw what was happening with the lake over so many years, but administration after administration only commissioned studies, spent money, and we never got anywhere,” says committee vice president, José Alvaro Mirón.

#### Berger seen as ally

When Oscar Berger took office in Jan. 2004, the committee saw an opportunity: Berger's family owns a house at Amatitlán and members of the committee remember he used to water ski on the lake. By then, the panel had researched relatively low-cost cleanup options, which they presented to Berger's team.

Previous proposals had focused on the construction of large treatment plants, says Mario Estuardo Fuentes, the official overseeing the Berger administration's mega-projects. “These plants cost around [US]\$160 million and most of the ones installed in Latin America have failed,” says Fuentes, whose portfolio also includes plans for a highway, a ring road around the capital, a metropolitan park system and a commercial port on the Pacific. “The problem is that to maintain them you spend over [US]50 cents for every cubic meter of water you treat.”

The current plan features an initial phase comprising four separate initiatives being paid

for with the IDB loan. In the first of these, the government will line the banks of the Villalobos with rocks and mesh along an 11.5-mile (18.5 km) stretch to curb erosion and sedimentation.

The second initiative calls for the creation along the river of three green filters—large fields featuring long, shallow canals filled with hydroponic plants. As river water flows through the canals, the plants will absorb pollutants. The third initiative involves installation of 28 electric devices to improve the lake's oxygen content and removal of water hyacinths and garbage with a floating harvesting machine. The harvester and two water-oxygenation devices already are in place and have improved water quality, says Edgar Zamora, head of the Lake Amatitlán Watershed Sustainable Management Authority (Amsa), the agency overseeing the project.

The fourth component of the initial phase is to build three sanitary landfills to replace the area's current, unregulated dump. Already, Amsa has cleaned up three clandestine dumps on the road around the lake and converted them into scenic overlooks.

#### And if that doesn't work...

Zamora says if water quality fails to improve sufficiently in the initial phase, a second phase will be undertaken to reroute the Villalobos so it flows into another river instead of the lake. He notes the plan's first phase represents an emergency effort to save the lake from what he terms its imminent death.

Ultimately, however, the government hopes to control water contamination at its source. To that end, the Environment Ministry last month released new liquid-waste disposal regulations. Environment Vice Minister Sergio Veliz points out that allowable levels for contaminants were too permissive and that domestic waste wasn't regulated at all. The new rules create stricter heavy-metal limits, which take effect July 31, and set a six-year timetable for tightening emissions standards for other pollutants.

Government officials recognize that the new regulations won't improve matters if the Environment and Natural Resources Ministry can't enforce them. On that score, Veliz insists his ministry is working closely with the special prosecutor's office for environmental crimes, a body that thus far has been largely ineffective.

The Amatitlán Committee's Mirón feels optimistic about the lake's chances, however. He says Amatitlán looks better already.

“That this government is doing anything at all is making a difference,” Mirón says, adding: “We are out on the lake rowing again.”

—Catherine Elton



Around the Region  
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International Monetary Fund, summarized research on Yasuní presented during a symposium in Ecuador last October. The scientists proposed that Ecuador implement a policy prohibiting the construction of roads for natural-resource extraction in national parks.

They also called for offshore-style drilling techniques as well as helicopter and monorail transport to minimize environmental and social impacts in Yasuní and other areas.

Petrobras responds that it is committed to meeting the terms of its environmental license. In a press release, the company said it would “demonstrate to the country and the world that the environment can be preserved and a sustainable oil project can be guaranteed, even in sensitive areas such as Yasuní National Park.”

Petrobras pledges to drill multiple wells from each platform; preserve tree-canopy bridges across the road to permit movement of tree-dwelling animals; and use special emission-control systems that cut pollution from the flaring of gas.

Scientists say that by opening habitat to hunters and settlers, the road could harm threatened species ranging from the giant anteater (*Myrmecophaga tridactyla*) to the Amazon river dolphin (*Inia geoffrensis*).

The government, which granted a license for the road project last August, so far has not responded to the scientists.

Petrobras, for its part, hopes to begin pumping 30,000 barrels of oil per day from Block 31 by the second quarter of next year.

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**Peru takes aim at poachers, loggers**

A spike in poaching and ongoing problems with illegal logging have prompted the Peruvian government to boost conservation of the vicuña as well as timber, both of which appear on the national seal.

A public-awareness campaign launched Feb. 14 urges Peruvians to “protect your identity” in the face of poaching and deforestation.

Officials estimate vicuña poaching has cost US\$13 million in the past decade in lost sales and tax revenues. Losses from illegal logging are harder to tally, but the World Wildlife Federation (WWF) estimates the country loses US\$8.5 million a year in tax revenue alone.

Thanks to better management by highland communities that own land where vicuñas range, Peru's population of the wild camelid has recovered since the 1980s, when it was nearly hunted to extinction. (See “By a hair's breadth, Peru's vicuña avoids extinction...but now what?”—EcoAméricas, Sept. '99 and “Who ought to market Peru's 'golden fleece'?—EcoAméricas, Aug. '03.)

Vicuñas numbered over 160,000 last year, up from 67,800 in 1994, when Peru got the animal moved from Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (Cites) to the less restrictive Appendix II. The shift permitted the sale of vicuña fiber from community-managed herds.

Vicuña fiber only can be sold legally if shorn from live animals in communally managed herds. But the fiber's value—from \$450 to \$700 a kilo—lures poachers. Community guards are outmaneuvered and sometimes killed by hunters using automatic weapons, satellite phones, night-vision equipment and four-wheel-drive vehicles.

About 1,300 vicuñas were killed by poachers last year, over twice the 2003 figure.

As it struggles with poachers, the government also is working to curb illegal logging. The National Institute of Natural Resources (Inrena) is boosting security because tighter timber-concession regulations have not stopped illegal loggers, even in protected areas. Since January 2003, officials have seized nearly 17.8 million board feet of illegal timber.

Agriculture Ministry officials estimate Peru loses 642,000 acres (260,000 has) of forest a year to illegal logging, but Inrena chief Leoncio Alvarez says the true scope of the problem is unknown. Officials believe illegal loggers “launder” their wood by paying holders of legitimate timber concessions to ship it to sawmills.

Inrena is opening four new inspection stations to catch illicit timber shipments. Inspectors also are visiting concessions to determine how much of the timber being extracted is illegal. Alvarez expects to have more information on the problem by May.

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**Guerrero green activist facing murder charges**

Rodolfo Montiel, the Mexican forest-conservation activist who was jailed on drug and weapons charges in 1999 and then released in 2001 amid an international outcry, once again faces legal troubles.

Four years after Mexican President Vicente Fox ordered his release, Montiel and 15 other farmers who opposed destructive logging in the

mountains of southern Guerrero state have been indicted in the 1998 murder of Abel Bautista, the 16-year-old son of a logging contractor working in the area.

All those charged in the case are former members of the Campesino Environmentalist Organization of the Sierra of Petatlán and Coyuca de Catatlán (Ocesp), an anti-logging group. Only one of them, former Ocesp Secretary Felipe Arreaga, has been arrested.

Declared a prisoner of conscience by the human-rights group Amnesty International, Arreaga is being defended by the Guerrero-based Tlachinollan Human Rights Center and the Environmental Defender Law Center (EDLC), a U.S. group, with support from Seattle attorney Marcia Newlands.

The Guerrero State Attorney General's Office accuses Montiel, Arreaga and others of ambushing and killing Bautista on a remote mountain road.

It is doing so based on statements made in 1998 and in 2000 by the youth's half-brother, Prisciliano Bautista, who claimed he witnessed the attack and recognized the attackers, including Arreaga and Montiel.

But supporters dispute the accusations, and have produced witnesses who claim Arreaga was several hours away from the crime scene when the murder allegedly occurred. They also question why Arreaga wasn't arrested until November, over six years after the crime was committed. And they point out that one alleged gunman named in the indictment died two years before the killing.

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## Q&amp;A:

# Making case for CDM as crucial step in climate battle

**Marc Stuart is a co-founder and director of EcoSecurities, a firm that develops and finances greenhouse-gas mitigation work around the world. In Latin America, EcoSecurities has had a hand in over 20 projects being prepared under the Clean Development Mechanism (CDM), a program established in the newly implemented Kyoto Protocol climate-change treaty. The CDM allows industrialized countries and companies based in them to meet their Kyoto emissions limits in part by helping to finance greenhouse mitigation in developing nations. They can do so by buying CDM emissions credits rooted in developing-country greenhouse initiatives that range from the capture of landfill methane for electricity generation to the construction of wind- and solar-power plants. Stuart, a University of Pennsylvania graduate with a master's degree from the London School of Economics, has worked in the greenhouse-gas trading field since 1993. He spoke with EcoAméricas Editor George Hatch from his office in Claremont, California.**



Marc Stuart

**If you're a European company that can't meet its greenhouse-gas emission limits, why buy carbon credits based on a CDM project in Latin America? Why not buy surplus allowances from another European company, which also is permitted under the Kyoto treaty?**

The reason you'd buy a CDM credit is that there's a price discount. The assumption is that you can go out into the CDM market and get a lower, firmer price over the long term than you can in what has been a fairly dynamic European market for emissions credits. Most CDM transactions are bilateral and long-term, like a power-purchase agreement. Most stop in 2012, the end of the first commitment period under Kyoto.

**Isn't there also more risk?**

Sure. It's developing-country risk. Projects fall over. But the reality is that in many of the contracts, a significant amount of the risk is put back on the seller. If the buyer accepts all the risk, the price is commensurately lower.

**How about if you're a Latin American wind-energy venture? Why go through the hassle of getting approval to sell CDM credits?**

Income from CDM credits can add anywhere from 2% to 5% of gross revenue to a wind-energy project or a small hydro project. That doesn't seem like much. But if your project has a 10% gross margin, the CDM revenue drops right to the bottom line and you have 12% or 15% margins. Having the relative certainty of those extra revenues gives you greater flexibility in negotiating power-purchase agreements. Now, with projects such as power generation from landfill methane, the carbon-credit income can approach 50% of gross revenue. That's because methane is a far more potent contributor to global warming than carbon dioxide, so eliminating it yields far more carbon credits. And methane can be used as an energy source.

**How is Latin America faring as a magnet for CDM projects?**

Latin America has been the leader since the start. It grasped the potential [of the CDM] early on. Right now, the purchase of credits from Latin American projects is over [US]\$100 million a year, and most CDM projects are in Latin America. Ultimately,

though, it's a numbers game. Since opportunities follow population, the greatest number of projects eventually will be in Asia, where there are 3.5 billion people and commensurate clean-energy and waste-management needs.

**What types of Latin American projects stand to attract the most investment?**

Everybody is competing for landfills [methane-capture and power generation] right now. And don't underestimate anaerobic digestion, which also yields methane. You're going to see a lot in anaerobic digestion, principally of agricultural and food-processing wastes. You'll see small and medium-scale hydroelectric projects—not big dams with big reservoirs but smaller, run-of-river stuff. We're not sure about wind [power] in Latin America. A lot of bagasse projects [making ethanol from sugarcane waste] are going forward in Brazil. Biodiesel and ethanol could be a fairly big play, particularly in Brazil and Argentina.

**In the larger scheme of things, how helpful can the CDM ultimately be in reducing world greenhouse-gas emissions?**

Emissions trading alone is not going to get us there. If we get a couple hundred million tons a year of real CO<sub>2</sub> reductions out of the CDM we'll be doing well. That's out of a 25-billion-ton global emissions profile across all countries. But the CDM is a key way to help create incentives for new technologies and implementations, which ultimately will get this thing solved. Its profound effect is in creating that pricing signal, that impetus for innovation. Once we have the market mechanism and legitimate pricing signals for emissions performance, then we can ratchet the next generation of Kyoto emissions caps down to incentivize new technologies. And over the next 10 to 20 years, it enables countries like China and Mexico to take on [emissions] caps. By doing CDM projects, they realize that reducing emissions is not voodoo, that it's really possible. These countries are fairly inefficient carbon-wise, and taking a reasonable cap and trading emissions allowances frankly is a lot easier way to get benefits because the CDM is procedurally complex. Already, the CDM has gotten millions of people in companies and countries around the world hunting for ways to reduce greenhouse emissions. That's a huge achievement in its own right.

**The absence of China and other major developing countries from the Kyoto process was one of the United States' main reasons for backing away from the treaty. How should this be addressed?**

The U.S. has to approach developing countries like Brazil, Mexico, South Korea, India, China, South Africa, Indonesia—the countries with large emission profiles. We have to really start saying to them that we need to find ways to bring you guys into serious caps, even if they're caps in the future. Nonetheless, the first step is for the U.S. to show commitment itself. Right now, we're not even posturing. We have to establish where ever-rising global emissions are going to top out before starting to go down. Right now, with the growth of continuing U.S. and developing-country emissions figured in, the global trajectory of greenhouse-gas concentrations is frightening.