

Conservation in Brazil

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Managing the rainforests

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"Sustainable management" could help to save the Amazonian rainforest without harming economic development

EMPTY fields, as far as the eye can see, line the highway for most of the 300km (186 miles) from Belem, eastern Amazonia's main city, to the timber-cutting town of Paragominas. Once it was all forest, but since the 1970s most of the trees in a broad strip beside the road have been cut—not just to extract timber, but to clear pasture for cattle-raising, encouraged by subsidies and tax incentives. Now, though, most of the fields lie empty and are becoming overgrown with scrub. Cows are seen so infrequently that they might be imagined to be an endangered species.

The deforestation, mostly in the past 30 years, of 14% of the Brazilian part of Amazonia (about a third of the Amazon rainforest, the world's biggest, is over the border in other countries) has been as much an economic as an environmental disaster. The usable timber would be ripped out of a stretch of forest and the rest would then be burned, because the land would often be worth more when cleared than it had been as untouched forest. This value, however, was due partly to excessive optimism over the region's agricultural potential, and partly to a set of economically perverse incentives provided by the government. When farming was actually tried, it was frequently found to be unprofitable. And many did not even bother to try. Some chopped down the trees, grabbed the

grants and then abandoned the land. Others used the "farms" they carved out of the jungle to disguise (highly taxed) profits on other businesses as farming profits (which used to be tax-free). As a result, there are now about 165,000km² of abandoned land in Brazilian Amazonia.

In recent years, the handouts and tax breaks that promoted deforestation have been reduced. As a result, good-quality forested land can be worth as much as 40% more than cleared land. A law passed in 1998 introduced stiff penalties for cutting trees without permission from Ibama, Brazil's environmental-protection agency. Though deforestation seems to have slowed since the mid-1990s (see chart), new figures due shortly will show that last year's deforestation was little different from that in 1998 and 1999, and about 1/2% of the forest was chopped.

Besides the cleared forest that shows up on the satellite pictures, each year a further, unmeasured amount (at least 10,000km², according to a study carried out in 1999) has its most valuable trees ripped out and is then abandoned. The big holes in forest cover caused by this reckless extraction make the area drier and thus vulnerable to fires. And if the forest does grow back, it grows differently, with fewer species, and choked by thick creepers that Amazonians call cipo. Though most of the rainforest remains intact—in contrast to the gloomiest predictions of the 1980s, which predicted it would be almost gone by now—it continues to be hacked away at a rate that will see it wiped out within the next 200 years.

A reduced impact

Fortunately, there are stronger grounds than ever for hoping that this will not happen. Belatedly, in parts of Amazonia such as Paragominas, where much local forest is either razed or damaged, timber firms are coming to see unharmed woodland as an asset that, properly managed, can yield a good income forever. Their enthusiasm has been bolstered by studies showing that "sustainable management" of forests, also known as "reduced-impact logging" (RIL), can be more profitable than the reckless conventional methods of timber extraction. One such study, conducted near Paragominas, found that RIL was 12% cheaper than conventional logging.

In RIL schemes, the area to be exploited is divided into perhaps 30 blocks, one of which has timber extracted each year, before being left alone for 29 years. This is enough for the forest to regenerate successfully, because in addition to rotation, the schemes take care to leave the oldest specimens of the exploited species standing. As well as providing cover from the tropical sun, the spreading branches of these tall trees re-seed the block with new specimens. In haphazard, conventional logging, such trees are usually hacked down and, because their trunks are often hollow or damaged, then abandoned—a waste of time and money for the lumberjacks, as well as maiming the forest. RIL reduces the damage further by plotting the position of each block's valuable trees on a computer, which then works out the shortest set of access roads that needs to be carved out to remove the felled trees. Lumberjacks are also taught ways of felling trees that avoid damaging those

around them.

With planning, the forest's animals, as well as its plants, can be preserved, according to Adalberto Verissimo of Imazon, a local environmental-research group. Amazonia's top predator, barring man, is the jaguar. This species needs about 500km² of forest to form a viable population of 50 cats. Though a typical managed-forestry scheme is only about a fifth of this size, by ensuring that at least "corridors" of forest are maintained between neighbouring schemes, the big cats and all the other animal species below them in the food chain can, it is hoped, survive reasonably well. It should, in other words, be possible for a stretch of forest to provide an endless supply of tropical hardwood but still suffer a minimal impact on its ecosystem.

The power of the consumer

Sustainable forestry of this sort has been talked about in Brazil since at least the 1980s, but started taking off only in the mid-1990s. Across the country, including areas outside Amazonia, there are now thought to be 10,000km² of forest under sustainable management. Foreign consumers of tropical hardwoods—furniture makers and sellers, for instance—are increasingly asking for timber that has been independently certified as coming from well-run RIL schemes, so that they can promise their environment-conscious customers that they are not contributing to the destruction of the rainforest.

The Rosa Group, a big timber firm in Paragominas, started using RIL in 1998, and is now applying for certification by the Forest Stewardship Council (FSC), an international agency that sets standards for sustainable forestry. Antonio Rosa, the firm's boss, sees certification as key to his plan to expand its exports to Europe and North America. Foreign buyers, he says, seem prepared

to pay extra for certified timber, making it even more attractive.

But most timber felled in Amazonia is used in Brazil, so the growth of sustainable forestry—and the decline of reckless chopping—will depend on how quickly Brazilian consumers switch to demanding certified timber. There are signs that this is starting to happen. In 2000, 40 Brazilian firms, including Tok & Stok, a big furniture retailer, formed a "buyers' group" to coordinate their purchases of certified wood, and jointly pledged to stop using uncertified timber by 2005. By creating a growing market for certified timber, it is hoped, supply will grow too. Imazon is conducting what it believes is the first-ever study of who distributes and buys timber in Brazil, to suggest ways of accelerating the switch to sustainable forestry.

Since much of the rainforest is still untouched and unclaimed, and thus public property according to Brazil's constitution, the federal and state governments could accelerate the move to sustainability by declaring it all a national park and then licensing timber firms to run RIL schemes in selected parts of it. A study by Mr Verissimo and others for the environment ministry concluded that just 10% of the remaining forest, managed sustainably, could meet all the existing demand for tropical hardwood. Much of the rest might then be declared untouchable.

In practice, policing such a huge preservation area against illegal logging would be an immense task. A national park that existed only on paper would not be worthy of the name. And Ibama, whose job it would be to patrol this park, has a reputation for inefficiency and corruption. It seems to be improving, but slowly. Timber firms in Paragominas say the local branch that inspects them is now doing a reasonable job, but they

complain of "unfair competition" from surrounding regions where the agency is ineffective.

Some environmentalists say the answer is to take the job away from Ibama (whose broad remit includes dealing with everything from oil slicks to urban noise) and create a specialised body similar to America's Forestry Service. Raimundo Deusdara, an environment-ministry official responsible for forest preservation, agrees that the idea is worth considering. In the meantime, he hopes that a new environment tax, to be introduced soon, will at least double Ibama's budget, and thus make it more effective.

Another hindrance to the effort to control illegal logging has been that, since Brazil lacks a central land register, it has been easy to steal publicly owned forest. Only now has the federal government launched a campaign to seize back the vast tracts of Amazonia that have been stolen over the years. A law creating a land register has been passed, and the government hopes the register will be compiled by 2003.

Combined with better land registration, improved satellite imaging should help to monitor, and thus prevent, deforestation. Brazil's space-research agency, INPE, currently produces its deforestation figures annually, but the Chinese-Brazilian CBERS satellite it uses scans Amazonia once every 26 days, so it is studying whether it could produce figures more frequently. Mato Grosso state, which includes a small slice of Amazonian forest, is already doing this on its own. A state laboratory is downloading satellite images and comparing them with a computerised land register to spot breaches of the often-flouted national forest code, which allows landowners in Amazonia to deforest only 20% of their property, and

even then, only with permission.

In theory, real-time detection of deforestation could be done for all of Amazonia, according to Thelma Krug of INPE, especially after the launch, due in 2004, of a Brazilian satellite that will provide images every two hours. Sivam, Brazil's giant radar-surveillance system for Amazonia, is now being brought into service. Though its main role is in defence, and to monitor the traffic in illegal drugs, it could also be used to detect loggers' activities. But collecting and processing such masses of data would be expensive. And, of course, it would only be worthwhile if there were an effective forest service which had enough wardens with boats, planes and helicopters to rush them to remote areas where illegal logging had been spotted.

Tales of the riverbank

Encouraging sustainable timber extraction, and suppressing illegal logging, are only part of what must be done to stop the rainforest being degraded and destroyed. The other big threat is population pressure. Last year's census found that about 12m people live in Amazonia, and that the population there is increasing by 3.7% a year. So there is a growing need to find people ways of making a living without despoiling the forest.

This was one of the objectives of the Pilot Programme to Conserve the Brazilian Rain Forest, set up in 1992, with the promise of \$350m from the Group of Seven rich countries—hence its nickname, PPG7. All sorts of projects were created to help forest dwellers make a living from such things as collecting fruits and plants. But, as an independent review concluded last year, progress has been very slow. Much of the \$88m spent so far has been swallowed up by bureaucracy, and many projects have not got beyond being experiments (though PPG7 does pay for Mato Grosso's

satellite-based enforcement system, which has already resulted in the jailing of 50 landowners).

One reason for the poor results, the report concluded, is that the scheme has done little to involve the private sector in creating forest-friendly businesses. But, here and there, independently of the PPG7, this is beginning to happen. In the Ilha de Marajo, an island twice the size of Wales at the mouth of the Amazon, Muana Alimentos, a food-processing company, is working with the local authorities to persuade the growing numbers of ribeirinhos (riverbank dwellers) to cultivate the acai palms that grow abundantly in the swampy land around their wooden huts. The company wants to expand the supply of the two products it sells: palm heart, the soft inner stem at the tree top, from which the fronds sprout, which is pickled and used in salads and pies; and the pulp of the acai fruit, which is served as a delicious sorbet on Brazil's poshest beaches.

Arriving in the settlement of Piria, Georges Schnyder, director of Muana Alimentos, accompanies a state official on a boat trip to try to interest the ribeirinhos in taking a short course in cultivating the trees to maximise yields of fruit and palm hearts. "You could be earning 8,000 reais (about \$4,000) a year from this plot," Mr Schnyder tells Raimundo and Rubens, a father and son who live nearby. The two smile politely but disbelievingly—incredulous that what is a small fortune by local standards might be within their grasp. The company already owns and tends its own plots of land on the island, but Mr Schnyder says he would rather leave the cultivation and processing to the locals and stick to being a distributor.

Like the lumberjacks in Paragominas, Mr Schnyder is seeking the FSC's certificate of sustainability, seeing it as a way to add value to his products. Despite the PPG7's poor progress, Mr Schnyder believes such schemes to find sustainable livings for

forest dwellers can be made to work. But, he grumbles, environmental groups could do more to help: they seem keener on sitting in their offices writing damning reports than on setting up local branches in forest villages to foster sustainable development by offering training and advice.

Political pressure points

Politicians must change their ways too. Though many of the incentives that led to chopping have gone, some persist. Amazonia's state governors opposed the recent decision by Brazil's president, Fernando Henrique Cardoso, to abolish Sudam, a corruption-riddled Amazonian "development" agency, whose handouts have sponsored much futile forest clearance.

The military dictators who ran Brazil from 1964 to 1985 were obsessed with populating and developing Amazonia, convinced that otherwise another power might seize it. Such paranoia has died down (though many Amazonians believe that America is plotting to invade on the pretext of saving the trees) but Advance Brazil, the government's 776 billion reais economic-development plan, still assumes that Amazonia needs to be opened up with new roads and waterways.

Yet a study published by William Laurence of the Smithsonian Tropical Research Institute, and his colleagues, in Science in January, argued that such transport links, when built near forests in the past, triggered massive deforestation. Extrapolating from past patterns to forecast the effects of the proposed roads and highways, the study said, at worst, only 5% of Amazonia might remain as pristine forest in 2020, with a further 24% being lightly degraded and the rest badly damaged or gone.

There are good reasons for hoping that things will not turn out so badly. Brazil's growing fiscal prudence may mean not all of Advance Brazil advances. It may also lead to further cuts in the remaining

incentives to chop trees. Past deforestation may not be a guide to the future, because it was mostly in the drier fringes of Amazonia rather than the really rainy rainforest, where agriculture would be even harder. The government has stopped settling landless peasants in forested areas, which until recently had been a smaller but significant cause of deforestation. And the reaction in Brazil and around the world to the Science paper helped, by forcing the government to submit *Advance Brazil* to an independent environmental-impact assessment.

Dr. Laurence agrees that things may not turn out as badly as the paper's bleakest prognostications. But, he argues, it is not so much *Advance Brazil* that threatens the forest as the thinking behind the project.

It assumes that economic development depends on "extensifying", ie, extending the amount of land in economic use, rather than intensifying the use of land already exploited. Maybe so, says Raul Jungmann, Brazil's land-reform minister, but the trouble is that extensifying is cheaper and simpler than intensifying. If richer countries want the Amazon rainforest saved (and, he correctly points out, they are lecturing Brazil on preserving its forests after destroying much of their own and their colonies'), they could offer more technology and capital to intensify the return on Brazil's existing agricultural land.

Though economic development has often been depicted as the environment's enemy, the richer a country gets, the more its people tend to worry about environmental matters. It is encouraging

that it was mainly Brazilian greens, not foreign ones, who successfully campaigned last year against a plot by the big landowners' lobby in Congress to weaken the forest code, and are mobilising against a similar attempt this year.

Brazil has already lost one tropical forest: the Mata Atlantica, which used to run all the way down the country's southern coast, but of which only 7% now remains, and that divided into small fragments. It is too early to guarantee the survival of the bigger, more famous one in Amazonia. Much more needs to be done to stop it being eaten away by 1/2% or so each year. But its chances are improving, especially now it is increasingly being seen as a valuable economic asset, something that could produce returns forever.