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'Boom and bust' of deforestation

By Richard Black
Environment correspondent, BBC News



The Amazon forest may be worth more alive than dead, researchers say

Cutting down Amazon forest for cattle and soy does not bring long-term economic progress, researchers say.

A study of 286 Amazon municipalities found that deforestation brought quick benefits that were soon reversed.

Writing in the journal *Science*, the researchers say the deforestation cycle helps neither people nor nature. They suggest that mechanisms to reward people in poorer countries for conserving rainforest could change this "lose-lose-lose" situation.

Jumbled paths

“ Reversing this pattern will hinge on capturing the values of intact forests ”

Andrew Balmford, Cambridge University

[Nature loss 'dwarfs bank crisis'](#)

The Brazilian government has long had a twin-track approach to the Amazon, which contains about 40% of the world's remaining rainforest.

While the land development agency Incra settles people in the region as a way of giving them land and livelihoods - a policy that dates from the 1970s - the environment ministry is trying to reduce the rate of deforestation.

Last year the environment ministry named Incra as the country's worst illegal logger.

The Science study suggests that the settlement and expansion policy is not producing real benefits for people.

Ana Rodrigues and colleagues assessed the development status of people in 286 municipalities using the UN's Human Development Index (HDI), which combines measures of standard of living, literacy and life expectancy.

Some of the municipalities were in areas of virgin forest.

Others had already lost all their trees, and some were in the process of being deforested.



Soy plantations did not provide long-term benefits in this study

Areas in the initial stage of deforestation yielded HDI scores above the average for the region.

But once the period of deforestation had passed, scores returned to the values seen in areas that had not yet been logged.

"It is generally assumed that replacing the forest with crops and pastureland is the best approach for fulfilling the region's legitimate aspirations to development," said Dr Rodrigues

"We found although the deforestation frontier does bring initial improvements in income, life expectancy, and literacy, such gains are not sustained."

The "boom and bust" pattern was the same for each of the three aspects of the HDI, showing that even a straight economic benefit was not maintained.

REDD dawn

As the study emerged, UN climate negotiators are meeting in Bonn to discuss aspects of a follow-on treaty to the Kyoto Protocol, which is supposed to be finalised by the end of the year.

One of the aspects of the new treaty will be a mechanism that rewards local communities for keeping carbon-absorbing forests intact - a mechanism known as REDD (Reducing Emissions through Deforestation and forest Degradation).

Andrew Balmford, a co-author of the new study, said REDD and other proposals could change the current situation, which he described as disastrous for local people, wildlife and the global climate.



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[Bumpy road to sustainability](#)
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"Reversing this pattern will hinge on capturing the values of intact forests... so that local people's livelihoods are better when the forest is left standing than when it is cleared," said the Cambridge professor of conservation science.

"Discussions being held in the run-up to this December's crucial climate change meeting in Copenhagen... offer some promise that this lose-lose-lose situation could be tackled, to the benefit of everyone - local Brazilians included."

The research was possible only because Brazil has good data on human development and on deforestation, which these days is measured by satellites.

But Ana Rodrigues believes the conclusions probably hold true for other countries stocked with tropical forests in southeast Asia or west Africa.

"I would be very surprised if we didn't see this boom and bust pattern emerging in these areas as well," she told BBC News.

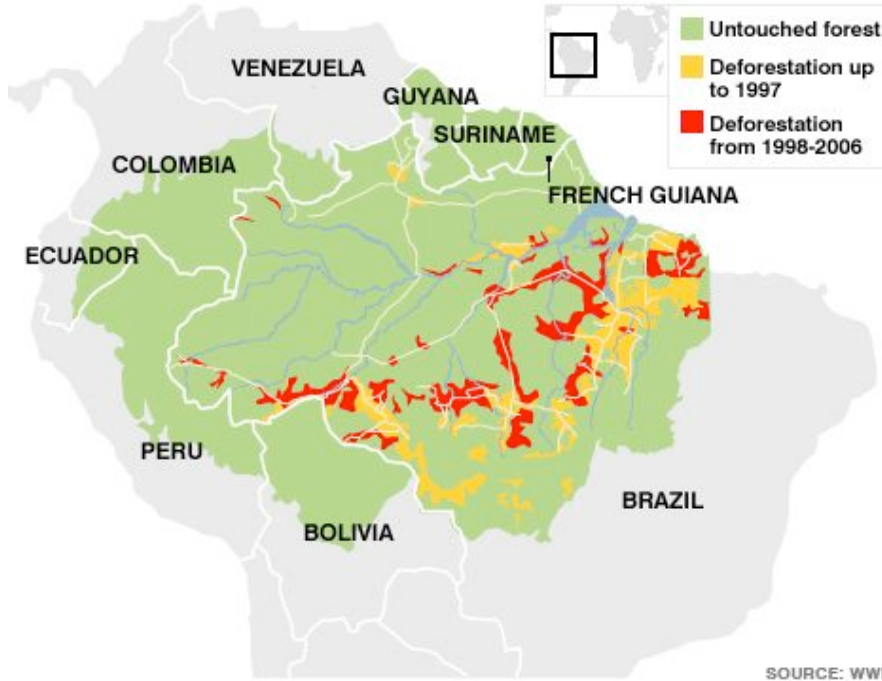
President Lula is currently debating whether to ratify a bill that would grant legal status to illegal settlers and loggers in the Amazon region.

Environmentalists say the bill would increase the rate of land-grabs, with a knock-on rise in illegal logging likely.

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The Amazon in graphics




AMAZON RAINFOREST



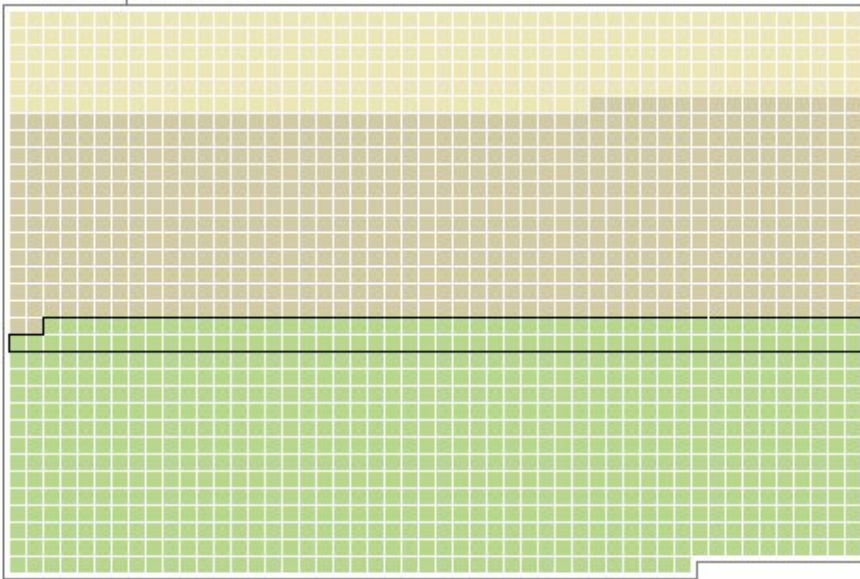
The Amazon rainforest is the biggest tropical forest in the world, covering some 40% of the continent of South America, spread across nine countries and 6.6m square kilometres. More than 40,000 plant species, including 1,000 different trees, have been identified in the rainforest. According to figures from the World Wide Fund for Nature (WWF), it is also home to 427 different mammals, 1,294 birds, as well as 30 million people, including more than 220 indigenous groups.

DEFORESTATION

About 65% of the Amazon rainforest lies within Brazil and is home to 13% of the country's population. Since 1970 almost 700,000 square kilometres of the Brazilian Amazon have been cleared. The area shown in squares below represents the 4.1m square kilometres of the Brazilian Amazon and shows how much has been cleared or is at risk. Each square measures 2,500 square kilometres.

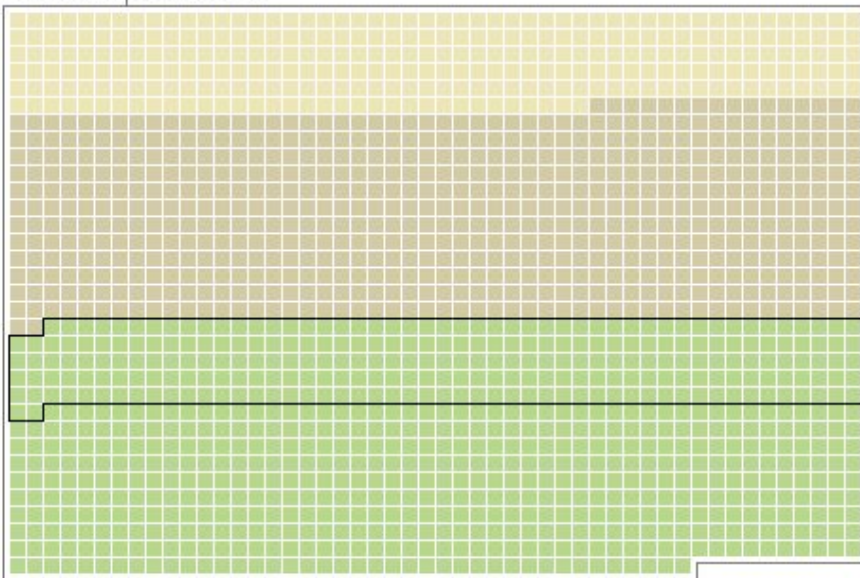
-  Land cleared by deforestation 1970-2007
-  Likely to be lost by deforestation and drought by 2030 (WWF 2007)
-  Untouched forest

Area of Amazon Rainforest



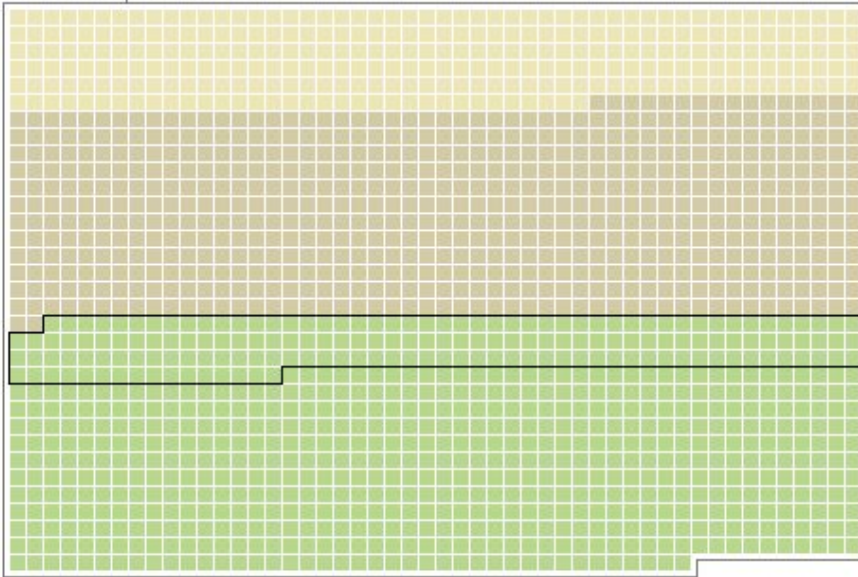
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Area of Amazon Rainforest

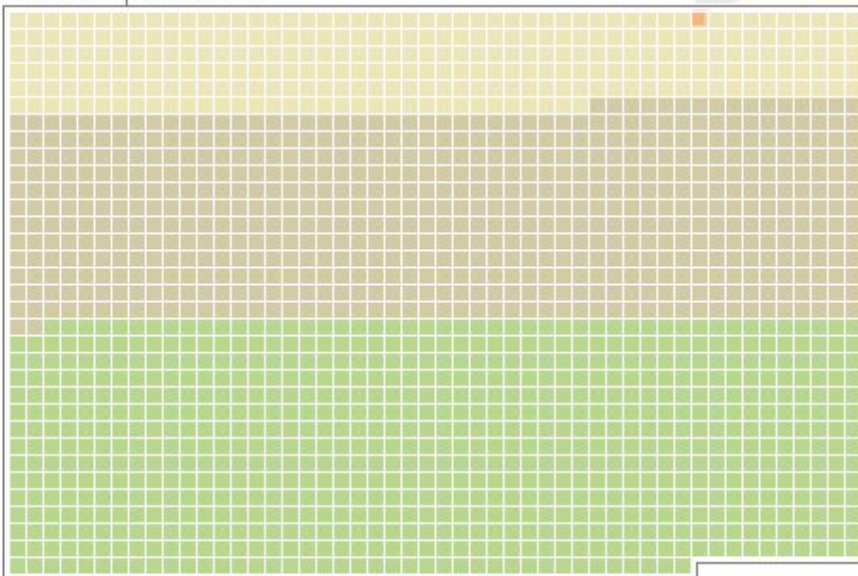


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Area of Amazon Rainforest



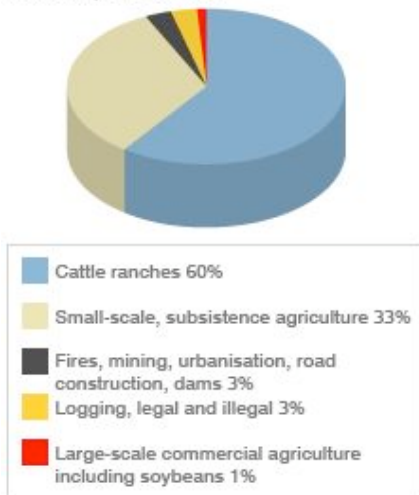
Area of Amazon Rainforest



Click to see rainforest compared to area of the following...
UK France California Greater London

CAUSES OF DEFORESTATION

CAUSES OF DEFORESTATION IN THE AMAZON, 2000-2005



SOURCE: Mongabay.com

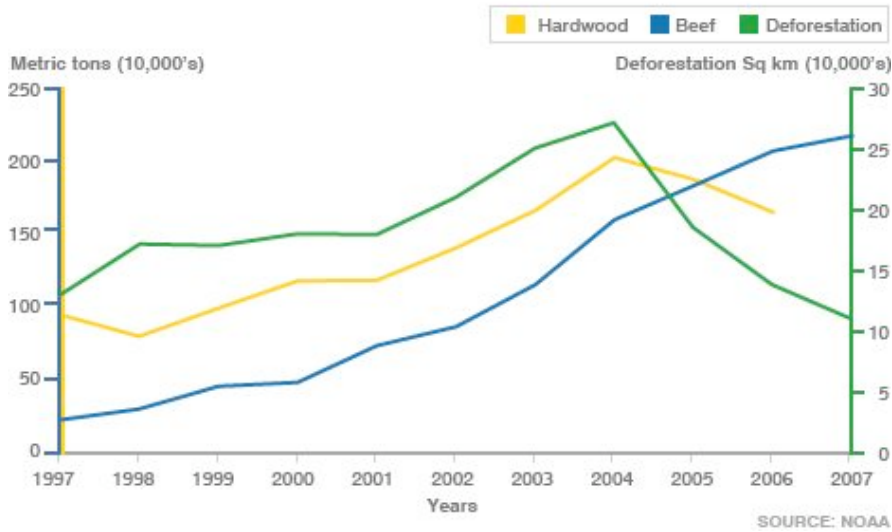
Cattle ranching is the leading cause of deforestation in the Brazilian Amazon. Since 1990, the number of cattle in the Amazon has more than doubled from 26 million to 57 million in 2002.

The rise in production has been driven by a huge rise in beef exports - combined with a revaluation of the Brazilian currency, the Real, which made cattle ranching more profitable for farmers and encouraged them to deforest.

The graph below shows how deforestation rose as beef and hardwood exports increased until 2004.

Since then the government has achieved some success in reducing the amount of forest being cleared, through controlling illegal **logging**, more land inspections and creating conservation areas, although figures released in January 2008 suggest deforestation is beginning to rise again.

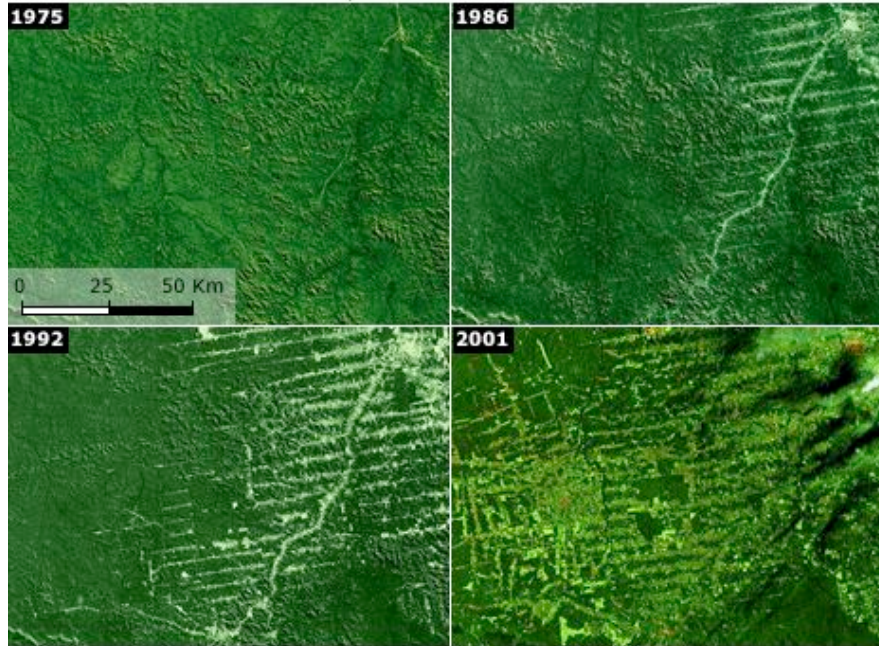
COMPARING DEFORESTATION RATES WITH HARDWOOD AND BEEF EXPORTS



SOURCE: NOAA

Logging in the Amazon is theoretically strictly controlled by licensing which allows timber to be harvested only in certain areas. However, the environmental group, Greenpeace, estimates that 60-80% of all logging in the Brazilian Amazon is illegal.

DEFORESTATION IN RONDONIA, BRAZIL



SOURCE: Science Photo Library

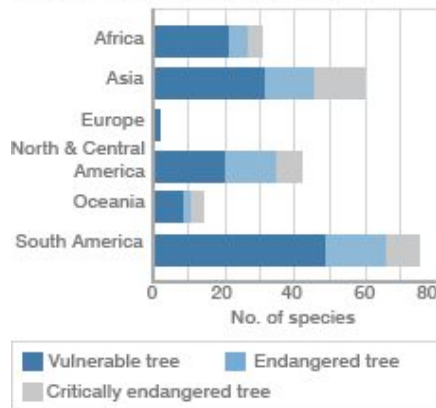
Brazil overtook the US as the world's leading exporter of **soybeans** in 2005/6, according to the US Department of Agriculture.

Although soybean farmers tend to occupy land already cleared of forest, they accelerate deforestation in other areas by pushing **subsistence farmers** further into the forest and encouraging the development of new roads and other infrastructure.

Satellite pictures, like those above, show how farmers begin clearing land along roads and gradually spread further into the forest.

THE FUTURE

AVERAGE NUMBER OF THREATENED FOREST TREE SPECIES BY REGION



SOURCE: FAO 2006

Deforestation is threatening the future of the forest - with dozens of tree and plant species at risk of extinction. The International Union for Conservation of Nature, IUCN, which monitors plant and animal species, calculates there are 382 plant species in Brazil at risk. It also classifies 343 different types of mammals as at risk.

There are also fears large-scale deforestation could contribute to global warming. The Amazon acts as a "carbon sink", absorbing carbon dioxide. But once the trees are cut down, this absorption stops. Often the wood is burned, releasing carbon; and the loss of forest cover can also lead to carbon release from the soil. Research at the Paulista State University in Guaratingueta, Brazil, calculates an average of 22,000 tons of carbon dioxide is emitted per square kilometre of forest cut down.

The forest also releases enough water to the atmosphere via evapotranspiration to influence world climate patterns.

Forecasts of the forest's future predict deforestation will continue. The WWF predicts 30% of the forest will be lost by 2030, if deforestation continues at the 1998-2003 rates and current climate conditions apply.

Even the best case scenario projection suggests 20% of the forest could be lost, if the government's schemes for preserving the forest succeed.

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Bumpy road to Amazon sustainability

By Richard Black

Environment correspondent, BBC News website, Rio Branco

It was one of the more bizarre contradictions you could think of: an organisation dedicated to saving the rainforest carrying to hospital someone who had just been trying to burn it.



“ With reduced-impact logging and certification, you know you are going to have some forest left to leave to your children ”

Fatima Gonsalves

Not that it was easy to think, as we almost flew over the serrated dust track leading out of the forest, with WWF press chief and part-time rock impresario Max Arraes hammering the pickup truck to ever greater speeds.

Right now our priority was saving a life, not a tree. In the back seat of our truck lay an elderly man with burns covering both legs - burns sustained as he fell in a fire of his own making, hit on the head and knocked unconscious by a tree his fire had killed.

In the Amazon, this sort of land clearing has been a way of life for decades.

Seduced into believing cattle-raising is the route to riches, often encouraged by the government's economic development agencies, settlers have nibbled away at the edges of the Amazon forest, clearing hectare after hectare for pasture.

A thought I tried unsuccessfully to keep away from as we bumped towards the local hospital was that a little part of the forest had finally taken some small revenge on the slashers and burners.

Family business

We had met the old man towards the end of a day which had taken us about two hours north of the state capital Rio Branco into a forest owned by Fatima Gonsalves.

For the BBC World Service, we had come to Acre state in the far west of the Brazilian Amazon to find out what sustainable forestry means here, and whether it can succeed.



Fatima is one of its poster children.

She comes from a family of loggers, she told us; a family which has not always played by the law, and which saw the forest as something to be exploited for maximum instant gain.

But Fatima had a Damascene conversion; and the agent of change was her daughter Mayara.

Mayara recounted how she had been ashamed at school when the teacher asked her class about their parents' jobs. "I pretended they were doctors because I didn't want to say they were destroying the forest," she said.

Eventually Mayara's embarrassment persuaded her mother to contact WWF, whose forest trade office Estevao Braga introduced Fatima to the concept of reduced impact logging.



Fatima Gonsalves maintains a sawmill close to Rio Branco

This is markedly different from selective logging, which is unreservedly commercial and aims simply to remove the most profitable trees irrespective of any damage to the health of the forest.

Reduced-impact logging, by contrast, begins with what you must leave behind.

You do not log near streams or lakes; you do not cut trees which are important for mammals or those which provide copious supplies of saplings.

"With reduced-impact logging, you don't extract more than six trees per hectare, sometimes even less than that," Estevao told me as we wandered among the trunks and creepers, insects whining powerfully all around.

"You don't come back to log in the same place for 25 years; and that allows the forest to maintain all its

services, like biodiversity, water quality and air quality, while at the same time providing wood that will create income."

Now a large slice of Fatima's forest is certified as meeting Forest Stewardship Council standards, a complex set of environmental and social conditions.

The expenses may be greater, the income correspondingly less; but she is happy.

"I realised I was harming my family, my society and the forest itself," she said.

"Although the money is higher in conventional logging, you are taking the risk of being fined, being arrested; and with reduced-impact logging and certification, you know you are going to have some forest left to leave to your children."

Forest power

In an "active" sector of Fatima's forest I took a ride on a skidder, a bulldozer-like beast of incredible power which ploughs its way into the forest at walking pace, engine revving and gears grinding, crushing all in its path.



“ We have the trees that will be cut down, and the ones that will be left to regenerate the forest ”

Sergio Safe

During the 10 minutes I spent in the skidder's iron-grilled cab, we made one foray into the forest and pulled out one huge trunk; we also uprooted about 16 saplings on the way. Is this really something that a self-respecting environmental group can endorse, I asked Estevao?

"It is, because we must consider the power of the forest to recover itself," he responded.

"If you come back in two or three years from now, where that log was hauled out of the forest, you won't be able to tell that a skidder had gone through it."

For reduced-impact logging to work, you must first have a detailed map of the forest - and someone skilled enough to make it.

"We mark all the trees in the plot, all the trees in different categories," explained Sergio Safe from the

forest consultancy Tecman.

"We have the trees that will be cut down, and the ones that will be left to regenerate the forest."

Sergio is currently employed by the Acre state government to make "microzone" maps of the Antimary state forest, which means walking up and down along grid lines marked by stakes, 25m apart, plotting every tree of loggable size - usually more than 45cm (18in) in diameter.

Watercourses are marked too; and then foresters decide where to build the temporary roads they need to get the trunks out with minimal disruption to the rest of the trees and everything that lives among them.



Certified logs must travel with documents detailing their origin

It is physical work in the humid jungle, and not without its risks; everyone I met who spent time regularly in the forest had contracted leishmaniasis, an insect-borne infection which can take years and heavy courses of drugs to cure.

And all the good work can be undone in an instant. On the way into the Antimary forest we drove through an area which should have been free of human interference.

It was anything but. Swathes of forest had been burned; a pair of soccer goalposts, made from fragments of a once mighty tree, stood mockingly at either end of a clearing, with branches still smouldering behind.

Something had gone wrong. Perhaps forms had gone astray, perhaps the economic development officials had not consulted the environment officials; perhaps money had changed hands.

Either way, the forest was gone.

Flames of history

Xapuri, a few hours west of Rio Branco, is the home of Chico Mendes, the inspirational activist against destructive cattle-ranching whose murder at the hands of ranchers in 1988 lit a "fire of forest awareness" in Brazil.

Mendes developed the concept of an "extractive reserve" - a community-owned forest where people would extract what they needed to live, hunting mammals, collecting nuts and berries for eating and for selling, tapping rubber trees for latex, logging trunks which the forest could afford to lose.



Settlers had cleared forest which was supposed to be preserved

"A rubber tapper doesn't need to take a lot from the forest to have a decent life," explained Chico's cousin Nilson Mendes, who lives the extractive reserve dream today.

"The most important tree for us now is the *castanheiro*, the Brazil nut tree. This year I've already taken 25 cans of 18 litres each with the nuts, and I can sell each can for about 10 reais (\$5)."

Alongside all the forest provides in food, these small sums are clearly enough to live on; but not, one suspects, much more.

The government, led by former forester Jorge Viana, plans to meld the traditions of people like Nilson Mendes with modern business expertise.

The idea is to generate as much wealth as possible from forest products by processing them locally; so Acre will export timber decking rather than raw logs, and cartons of juice made from the fabulous *acai* berries rather than the berries themselves.



Nilson Mendes lives according to the ideas of his cousin, Chico Mendes

Sawmills and other plants are springing up along the roads into Rio Branco.

Acre has all the tools and conditions for the establishment of truly sustainable forestry. It has the social history of the rubber tappers, a committed state government, a wealth of professional expertise and copious NGO support.

If it succeeds, it will be a model for those other Amazon states where ranchers or soya barons hold the political reins and deforestation continues unabated.

If it fails, the outlook for this incredibly special part of the planet, and the services it brings to the rest of us, will be a good deal bleaker.

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