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Brazil

Tropical Forests Are Flipping From Storing Carbon to Releasing It

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Illegal logging and land seizures are driving this ominous yet overlooked scientific trend.

It wasn’t until heavily armed men arrived from across the river that Cláudio José da Silva realized who was bankrolling the latest episode of illegal logging. His bare chest traced with blue-black lines of body paint, da Silva is a member of the Guajajara people in eastern Brazil, one of the country’s largest indigenous groups. Their side of the CarÃº River is pristine Amazon rain forest. Across the river, the rain forest has been razed and replaced by cattle ranches and farms. On paper, the Guajajaras’ nearly 700 square miles of rain forest are protected as federally recognized indigenous territory. In reality, the group lives under constant threat of theft and violence. Just the day before, da Silva’s self-defense force, the Guardians of the Forest, caught the local sheriff’s son using cattle to drag lumber from their forest. Armed with machetes, they chased him away and confiscated the cows. Now the sheriff had come bearing an ultimatum: Return the cattle or his posse would retrieve them by force.

“This struggle, for us, is war,” da Silva says. He claims to have received dozens of death threats since founding the Guardians of the Forest in 2012. “The loggers carry arms. The farmers are armed. They want confrontation.” Indeed, on August 12, a month after I visited da Silva, the dead body of his comrade, Jorginho Guajajara, was found in a nearby river.

Violent conflicts over land and logging have spilled blood throughout the Amazon since the 1980s, when the murder of the organizer Chico Mendes made international headlines. Brazil is the deadliest country in the world for land defenders, with more than 140 killings since 2015, according to the NGO Global Witness. The state of MaranhÃ£o, where the Guajajara live, is perhaps the most dangerous: In 2016, more attacks on indigenous groups occurred there than anywhere else in Brazil, according to the Pastoral Land Commission.

Apart from the human toll, the violence in the Amazon is also driving an ominous trend in the earth’s climate system. Last October, Science published one of the most importantâ€”and least noticedâ€”climate studies in years.[1] Tropical forests in the Amazon and around the world have been so degraded by logging, burning, and agriculture that they have started to release more carbon than they store, according to scientists from the Woods Hole Research Center and Boston University. In the parlance of climate change, these forests are flipping from carbon sinks to carbon sources.

This is very bad news, for two reasons. First, until now, the capacity of forests to absorb carbon dioxide via photosynthesis has been a crucial buffer against greenhouse-gas emissions: The forests’ absorption of CO2 has limited the global temperature rise to considerably less than it would otherwise be. Second, forests must absorb even more carbon going forward if humankind is to contain that temperature rise to a survivable amount. Current trends put the earth on a trajectory to an increase of 3.5 degrees Celsius, an amount that scientists have warned is “incompatible with organized society.” Minimizing future emissions is imperative, but it’s not enough. To meet the Paris Agreement’s commitment to hold the temperature rise “well below” 2Â°C, humankind must also “go negative.” That is, we must extract the CO2 that’s already in the atmosphere and store it where it can no longer trap heat, notably in the earth’s trees and soil. And that means growing more trees, not cutting them down.

“This is really very serious,” says Carlos Nobre, Brazil’s leading climatologist, in an interview at his home in a tree-lined suburb outside SÃ£o Paulo. Nobre has the tired expression of someone who’s been ringing the alarm bell for too long while society looks away. He says the world’s forests have been absorbing roughly 30 percent of the CO2 emissions generated by human activities. But Nobre’s research, conducted with Thomas Lovejoy of George Mason University, has found that deforestation, combined with rising temperatures and the droughts and fires they

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encourage, is taking a heavy toll.

“We’re dangerously approaching a point where the convergence of all these drivers might reach irreversibility,” Nobre says. Cross that threshold, and much of the Amazon rain forest will begin to die. The Amazon could reach that tipping point if 20 to 25 percent of its original forest cover is destroyed, Nobre estimates. In that case, more than half the Amazon would transition from rain forest to savannah, releasing massive amounts of CO2 into the atmosphere as the trees die and burn. Such a “dieback” is one of the scenarios that could trigger runaway global warming, according to the “hothouse Earth” study published by the Potsdam Climate Impacts Institute in August.

Humans have deforested roughly 16 percent of the entire Amazon basin so far, Nobre cautionsâ€”just 4 to 9 percent from his projected tipping point. This means that the deforestation must be haltedâ€”and soonâ€”if humankind is to have much chance of avoiding a climate catastrophe.

Just as the consequences of the Amazon’s deforestation are global, so are its causes. “There’s really no mystery as to the main reasons we’re seeing tropical forests disappear,” says Frances Seymour, a senior fellow on forest and governance issues at the World Resources Institute. “Vast areas continue to be cleared for soy, beef, palm oil, and other globally traded commodities.”

The world’s growing demand for meat has transformed Brazil into an agricultural superpower. Today it boasts the largest commercial cattle herd in the world. It’s also the world’s largest exporter of soy, mostly for animal feed, with food giants like Cargill and Archer Daniels Midland eagerly processing that harvest into their transnational supply chains. Globally, hundreds of billions of dollars are invested each year in cattle, grains, and palm oil, which translates into additional deforestation. Dirty money only feeds the destruction: More than two-thirds of the foreign capital driving the expansion of Brazil’s soy and beef sectors were channeled through offshore tax havens, according to a Stockholm University study published in Nature in August, making accountability for environmental destruction that much harder to enforce.

As with the assaults against the Guajajaras, much of the clearing of tropical forests, in the Amazon and elsewhere, is illegalâ€”but it continues with the blessing of corrupt officials. Throughout Brazil’s so-called “arc of deforestation,” a crescent-shaped strip tracing the southern and eastern edges of the Amazon, such violent clashes are only the first stage in a chain of events that threatens indigenous people and global climate stability alike.

Criminal organizations and land grabbers start with illegal logging, Nobre explains, extracting valuable timber from indigenous lands and other supposedly off-limits areas. With the money gained from selling that timber, the criminals clear the land and plant grass for cattle. Once they have enough cows on the land, they draw up phony titles and sell the lots.

It’s at this point that the corruption becomes institutionalized. Astonishingly, criminals who seize land then have their actions made legal, because the Brazilian government grants them amnesty. In 2017, President Michel Temer signed legislation “regularizing” illegal land claims by anyone who appropriated Amazonian land before 2011. And that amnesty was an extension of the previous 2004 limit. The maximum area of claimable land was also increased, from 1,500 hectares (3,706 acres) to 2,500 hectares (6,178 acres) per person. “It’s a very perverse dynamic,” Nobre says.

In Brazil, that dynamic has also transformed the political landscape, enabling a coalition of landed rural elites called the ruralistas to dominate, despite the fact that 86 percent of Brazil’s population lives in cities and towns. Some have called the ruralistas’ breathtaking rise to power a “parliamentary dictatorship.” Their success is due to the growing economic clout of the agribusiness sector, as well as a savvy political unionâ€”dubbed the BBB caucus, for “beef, Bibles, and bullets”â€”in which the farm lobby joined with evangelical and anti-gun-control parties to take control of

Brazil’s Congress.

The rise of the ruralistas has largely reversed the Brazilian government’s previous success in slashing deforestation rates. Between 2002 and 2009, federal protections were applied in the Amazon to an area twice the size of Germany; enforcement was beefed up; and financial credit was denied to properties associated with illegal deforestation. Those hard-won achievements are now being gutted. An embattled Temer, in exchange for the ruralistas’ support, has provisionally lowered environmental standards, suspended the ratification of indigenous lands, and reduced the size of protected areas. Nara Baré, who heads the Coordination of Indigenous Organizations from the Brazilian Amazon (COIAB), one of the largest such organizations in South America, explains that the ruralistas’ motives are simple: “to expand agribusiness and to expand large enterprises that are focused on the Amazon.”

In the agricultural boomtown of Sinop in northern Mato Grosso, that logic is on full display. Sinop’s brief history includes all the stages of the Amazon’s deforestation: from logging in the 1970s, to cattle ranches in the 1980s, to today’s mechanized soy plantations, which have brought wealth and prosperity to early settlers like Jaime Farinon, who owns an 8,000-acre farm there.

“We came to this region in 1985 to occupyâ€”to turn this abandoned land into a productive area,” Farinon says, tapping a cigarette from a pack of Dunhills. Those were the final days of Brazil’s military dictatorship, an era that Farinon remains nostalgic for. “Maybe we’ll manage to get a Trump here to align this country.” This is a none-too-veiled allusion to Jair Bolsonaro, a current presidential candidate and apologist for Brazil’s dictatorship, who is known for his attacks on women, black people, homosexuals, and indigenous communities. “In these parts,” Farinon adds, “you have to have a little blood in your veins.”

When he first arrived in the Amazon, Farinon was allowed to clear the trees from half of his land. The laws have since changed to allow only 20 percent of private lands to be deforested, which is hindering expansion, Farinon complains. He owns another 1,700 acres that aren’t worth clearing because of these limits: “It’s the laws that are blocking us.”

Officials at the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA), the federal agency for environmental protection, paint a very different picture. Evandro Selva, an IBAMA enforcement officer, works in the northwest corner of Mato Grosso. Selva looks the part of an environmental cop: square jaw, black polo shirt, and blue jeans, the keys for his truck clipped to a belt loop. With resigned weariness, he points to the stacks of green paper folders in his office, which reach from the floor to the ceiling. “All of these are finesâ€”deforestation embargoes, illegal mills, illegal timber transport from indigenous lands, from private lands.” But only 10 percent of the fines will ever be paid, Selva adds, because “there is no fear of being punished.”

President Temer reinforced that message last year, whenâ€”again with the ruralistas’ supportâ€—he slashed the budget of the Ministry of Environment, which includes IBAMA, by a staggering 43 percent. Those draconian cuts, and the political message they’ve sent, will make Selva’s work even more untenable. His field office is responsible for patrolling an area with one of the highest deforestation rates in the world. But “we only have four agents,” he tells me, “of which three will retire in the next 12 months.”

The ruralistas are also targeting one of the most effective strategies for protecting the Amazon: indigenous land rights. The ruralista bloc has introduced more than 100 bills in Congress aimed at reducing the land rights and autonomy of indigenous and other traditional communities. “Brazil’s debt with the Indian is not over land,” says Nilson LeitÃ£o, the ruralistas’ polished political leader, who wants to open indigenous lands to mining and other extractive industries.

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But indigenous people are fighting back. In April, more than 3,000 representatives from over 100 groups descended on BrasÃ-lia, the nation's capital, for a week of rallies that proved to be the largest mobilization of indigenous people in Brazilian history. The agribusiness lobby "is our main enemy," says SÃ´nia Guajajara, a vice-presidential candidate from the Socialism and Freedom Party and the executive coordinator of the Articulation of Indigenous Peoples of Brazil, the umbrella group that organized the mobilization. "They can't see the environment as a space that needs to be preserved because it guarantees life, guarantees water. They only see it as something to exploit, to create wealth." Guajajara argues that preserving the rain forest requires more financial support and legal protection for indigenous people so they can do the kind of patrolling that Cláudio José da Silva's Guardians of the Forest are doing in MaranhÃ£o. "The Brazilian state doesn't do it," she says, "so the indigenous people are doing it themselves. But they lack resources."

Fighting the Climate Wreckers

Guajajara's recommendation mirrors the findings of specialists: that the best way to defend forests is to empower the people who inhabit the forests, assuring them of property rights, legal standing, and government protection against invasions by outsiders. Annual deforestation rates in the areas legally managed by indigenous peoples have been two to three times lower than in other forests, while generating billions of dollars' worth of benefits from carbon sequestration, reduced pollution, clean water, and more, according to the Woods Hole Research Center and World Resources Institute. But in the Amazon, 71 million hectaresâ€"an area roughly the size of Chileâ€"remain undesignated public lands, leaving them especially vulnerable to deforestation. "The land grabbers consider these areas to be a no-man's land that can be invaded," says RenÃª Luiz de Oliveira, head of environmental enforcement at IBAMA.

Zero deforestation is possible in Brazil. One model of future land use projects that if the country continues to expand the agricultural and livestock frontier into new areas at the current rate, over 50 percent of the Amazon rain forest will be razed by 2050. However, if Brazil shifts to a sustainability scenario, reinvesting and strengthening its environmental policies and enforcement, deforestation can be virtually halted. Getting to that zero-deforestation future will require a reshuffling of economic incentives that makes it worthwhile to leave forests standing. But the payoff is potentially enormous, saving Brazil as much as $100 billion a year by 2030 while also fulfilling the country's emissions-reduction commitment of 43 percent under the Paris Agreement.

Meanwhile, in MaranhÃ£o, I watch as da Silva and his fellow Guardians wake before sunrise and pour sweet black coffee from orange thermos containers into shared glass jars. They paint their faces and chests with a red paste made from urucÃº seeds before climbing into speedboats for the day's patrol.

"This painting represents blood," da Silva tells me. "We paint when we monitor our territory. It gives us more strength, more energy. This is for fighting."

The day before, da Silva and I had stopped at the spot where the sheriff's son had downed the trees he tried to steal. Someone had placed a cross made of palm fronds on the riverbankâ€"a clear threat. But da Silva was undeterred. His biggest concern, he says, is that in 30 years' time, his people's territory will no longer be a vibrant rain forest, but rather the deforested landscape that relentless logging and industrial farming has engendered across the river. "We keep fighting," he tells me, "so that this doesn't happen."

The Nation

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[1] http://science.sciencemag.org/content/358/6360/230