

Increasing wildfires threaten progress on halting deforestation in Brazilian Amazonia



Sustainably managing the Amazon region is essential to mitigating global climate change and to preserving the biological and cultural diversity of the region. After promising reductions in degradation in the 2010s, a return to historically high levels of land conversion and deforestation during the past 5 years has severely undermined these goals. This land conversion – primarily the result of logging, mining and ranching – has generated social, economic and environmental burdens across scales¹. Encouragingly, signs of recovery towards Amazon protection are appearing under Brazil's current federal administration. But amid the drop in deforestation, a new threat is on the rise: uncontrolled fires.

The TerraBrasilis website of the Brazilian National Institute for Space Research (INPE) provides interactive maps of data on deforestation, forest-cover change and active fires across the Amazon and the Cerrado biomes². It shows, for example, that 2023 has already seen falling deforestation rates – deforestation alerts were 42% lower between January and July than in the same period of 2022. Additionally, major illegal mining operations that threaten the ecosystem and Indigenous communities (particularly in Yanomami territory) are being curtailed³. This decrease in deforestation follows policy and enforcement actions carried out under the Brazilian government since President Lula took the helm in January 2023, most notably the reinstatement of the 'Action Plan for Preventing and Controlling Deforestation in the Legal Amazon' (PPCDAm). However, the proximate causes of this decrease remain unclear. Some analysts suggest that a sense of impunity for illegal deforestation that developed under former president Bolsonaro's administration has been replaced with a fear of sanction – signalled by the reinstatement of the PPCDAm. Others believe the slowdown represents a hiatus in which actors who are responsible for deforestation are assessing the new political landscape.

Despite promising signs of reduced deforestation, Amazonia faces surging wildfire. Although rare historically, drought and heat waves under climate change – combined with deforestation and fragmentation driven

largely by agribusiness – have transformed fire into a leading cause of degradation and forest loss in Amazonia¹. In June 2023, the number of active fires in the Amazon reached 3,075, the highest for this month since June 2007, which had 3,519 fires (ref. 4). Total fire counts for the first half of 2023 were 8,344, 10.76% higher than the 7,533 fires during the first six months of 2022 (ref. 4). Previous spikes in fire counts (including the record-breaking fires for a non-drought year in August and September of 2022) were associated with uncontrolled deforestation⁵, a primary source of fire and a strong predictor of burned area. This year's high and climbing fire counts in the context of reduced deforestation highlight a decoupling of forest fires from deforestation; indeed, TerraBrasilis data show that only 19% of the fires were related to recent deforestation during January–June 2023 (down from 39% in 2022).

Hotter and drier climate conditions resulting from the 2023 El Niño are already affecting portions of the Amazon⁶ and may be increasing fires, consistent with previous El Niños⁷. Additional pressures may be affecting fire counts, including the lag effect of the deforestation boom associated with weakened enforcement of environmental laws under former president Bolsonaro – some areas of forest that were mechanically slashed in recent years are only now becoming dry enough to burn. Finally, landholders may be burning pastures earlier in the dry season⁸ in anticipation of a fire moratorium later this year, expected under a strong El Niño-linked drought. Although research is needed to better understand the contributions of these drivers, a clear expectation is that fire incidence will rise even higher with the anticipated drier conditions. Fires thereby threaten both the actual advances in forest protection made by Lula's administration and pose a second threat: weakening the public's perception of Lula's commitment to protecting the region.

In August 2023, Brazil convened a summit of Amazon nations to address sustainable development and forest preservation in the region. The summit's resulting Belém Declaration established many important objectives;

however, it fell short of a strong commitment to achieving zero deforestation by 2030 or to substantially reducing forest fire frequency. An initiative to improve monitoring, management and policy was proposed, but the summit's omission of fire as a potential driver of 'runaway' forest loss underestimates the potential of fire to undermine environmental gains. Strong and coordinated international efforts to tackle this growing threat with the objective of effectively eliminating rainforest fires are urgently needed. Among positive accomplishments, however, the declaration establishes an important alliance against deforestation; acknowledges fire as a point of concern; highlights the needs of Indigenous peoples and traditional local communities; and introduces a scientific body in the style of the Intergovernmental Panel on Climate Change (IPCC) that aims to produce evidence-based Amazon-specific solutions.

The future of Amazon forests under climate change – even if illegal deforestation can be 'zeroed out' – remains unclear under the threats of climate change, drought and fire. Nuanced science and management actions, including reforestation, forest management and agroforestry, will be necessary to avert the risk of runaway forest fire and degradation that is decoupled from deforestation. Developing these evidence-based actions should be a focus of this 'Amazon IPCC'.

The consequences of inaction on Amazon wildfires and inattention to the types and drivers of fires are severe and must be avoided¹. These include considerable carbon emissions from forest burning⁹ and a weakening of one of the world's most critical carbon sinks¹⁰. Other losses – including ecosystem services that support the biocultural diversity and bioeconomy of the region and the public health effects of smoke pollution – can damage the livelihoods and wellbeing of Indigenous peoples and local communities, increasing human mortality, morbidity and depression¹¹. Brazil, other Amazon nations and the international community must both cooperate and commit the support needed to rapidly advance research and governance for equitable fire-safe land management,

while curbing forest loss and shifting from a commodity-based economic model to a sustainable bioeconomy¹² that benefits all Amazonians and Amazon nations.

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Competing interests

The authors declare no competing interests.