

Fires in Amazon challenge emission reduction program

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Degraded forest island with a burnt edge lies within a deforested patch of Amazonian forest in Mato Grosso state, southeast Amazonia, as an example of one of the potential causes of increased fire incidence with reduced deforestation rates. Credit: University of Exeter

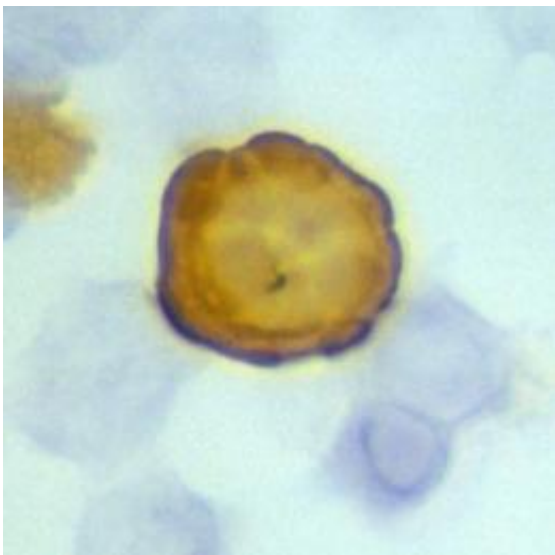
Fire occurrence rates in the Amazon have increased in 59% of areas with reduced deforestation and risks cancelling part of the carbon savings achieved by UN measures to reduce greenhouse gas emissions from deforestation and degradation.

New research led by the University of Exeter, published on Friday 4 June, in *Science*, analysed satellite deforestation and [fire](#) data from the [Brazilian Amazon](#) to understand the influence of United Nation's REDD (Reducing Emissions from Deforestation and Degradation) policy on fire patterns in Amazonia. The NERC (National Environment Research

Council) funded research shows that fire incidences may increase even with a decrease in deforestation rates.

Amazonian farmers are prone to keeping agricultural land free of new growth by ‘slash and burn’ methods, usually on a three to five yearly cycle. The extra carbon emitted by the leakage of fires from farms into surrounding forests edges and forest fragments as well as deforestation of forest regrowth, which are not accounted by the Brazilian’s deforestation monitoring system may therefore be partially negating carbon savings achieved through the UN REDD programme.

The research suggests that if sustainable fire-free land-management of deforested areas is not adopted in the UN-REDD programme, any carbon savings achieved by avoiding deforestation would be partially offset by increased emissions from fires.



This burn scar in a mature tree was caused by understory fire as evidence of fire leakage from surrounding farms into the edge of an Amazonian forest in Mato Grosso state, southeast Amazonia. Credit: University of Exeter

The UN-REDD programme is a multi donor trust fund which provides appropriate revenue streams to the right people, making it worth their while to change their [forest resources](#) behaviour. The efficiency of the UN-REDD programme as a [climate change mitigation](#) strategy depends upon the stabilisation of deforestation and degradation of the world's largest rainforest, the Amazon.

Dr Luiz Aragão an Environmental Scientist at the School of Geography, University of Exeter said, 'Changes in fire frequency could jeopardise the benefits achieved through UN-REDD as trends in fires are the opposite to trends in deforestation. However despite UN-REDD's vital importance in this region, fire is currently neglected in the emerging UN framework.'

Naturally occurring fires are very rare in the Amazon. Fires are normally caused by humans who farm the land. Burning deforested areas on a three to five year rotational basis improves the nutrients in the soil keeping it fertile and at a level that can produce food. Predications that climate change will create a drier area across the Amazon adds to the concern, as it is a difficult to control the spread of fires in such vast areas. The best option is to stop fires from occurring in the first place.



This image shows evidence of fire leakage from a deforested land into the surrounding forest in Mato Grosso state, southeast Amazonia. Credit: University of Exeter

Dr Aragao explained, ‘We need to change the way Amazonian people use and manage their land so that they can do this without fire. They would need financial assistance for machinery, training and technical support to enable them to comply with implementation and maintenance of fire-free management of their land.’

He added, ‘By changing land management practices in already deforested areas to fallow management and introducing more diversified and sustainable agricultural practices at a co-operative community level, it is possible to drastically reduce fires and carbon emissions. It would be expensive but it would protect the stability of Amazonian carbon stocks and diversity.’

Provided by University of Exeter

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