

# Subterranean blaze: Indonesia struggles to douse underground fires

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Vast blazes are ripping across the Indonesia's rainforests

Thousands of Indonesian firefighters are locked in an around-the-clock game of Whack-a-Mole as they battle to extinguish an invisible enemy—underground fires that aggravate global warming.

Vast blazes are ripping across the archipelago's rainforests, unleashing a toxic haze over Southeast Asia that has triggered health fears and sent diplomatic tensions with Indonesia's neighbours soaring.

Jakarta deployed more than 9,000 personnel to battle fires turning land into charred landscapes and consuming forests in hard-hit Sumatra and Borneo island.

But many of the blazes smoulder deep underground in once-swampy areas known as peatlands, where they can last for months and release eye-watering amounts of thick, acrid smoke.

"It's so much harder to fight fires on peatlands," a

dirty and exhausted Hendri Kusnardi told AFP outside smog-hit Pekanbaru city in Sumatra.

"Even after we've managed to put out a fire on the ground, sometimes it is not over because it's still burning underground. And then the next morning the ground fire will just reignite."

## 'Human behaviour'

The culprit behind Indonesia's blazes is usually illegal fires set to clear land for the lucrative palm oil and pulpwood industries—and the situation this year has been worsened by drier weather.

Some of the most serious fires happen in carbon-rich peatlands—topped with layers of decomposed plant material several metres thick—which become highly combustible when they're drained of water to be converted into plantations.

### Indonesia's peat fires: a smouldering problem

Factfile on Indonesia's forest blazes at the source of the Southeast Asian haze



- ▶ Indonesia's fires have been increasing in frequency and intensity since the 1990s
- ▶ Majority of wildfires set illegally to clear land for rubber, oil palm and other commodities
- ▶ This year has seen a prolonged drought  
Dry season: Apr-Oct

#### Peatlands

Tropical peatlands are found in swamps  
Made up of organic material accumulated over long periods of time  
Natural carbon storage  
Cover 3% of the world's land area, holding 21% of the world's soil carbon

*Buried plant material decomposes, producing peat*

Source: [GCC/asmc.csean.org/stanford.edu/iri.org](http://GCC/asmc.csean.org/stanford.edu/iri.org)  
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#### Peatland blazes

Peatlands are often drained for agriculture  
Fire-risk increases as soil moisture decreases  
The combination of draining and burning for clearance increases fire risk  
If fires start in peatlands, and soils are dry enough, blazes can go out of control  
As they smoulder underground, the fires can last for months

Indonesia's peat fires: a smouldering problem

"The forest and peatland fires that occur every year are a crisis created by human behaviour," said Rusmadya Maharuddin, a forest campaigner at Greenpeace Indonesia.

"Sometimes the fires will continue to burn for months, releasing emissions and causing haze."

Peat fires can belch out three times as much smoke per kilogramme of material than high-temperature forest fires, she added.

At the peak of Indonesia's 2015 forest fires—the country's worst in two decades—blazes in peat swamp forests emitted nearly 16 million tonnes of carbon emissions daily, more than the entire US economy in the same period, according to watchdog The International Union for Conservation of Nature.

Across the Pacific Ocean, huge fires tearing through the Amazon are compounding concerns about the long-term impact, as increasing fire outbreaks globally creates more greenhouse gas emissions and makes it harder to limit temperature rises, experts say.

### Detection drawback

Fighting peatland fires comes with myriad challenges because they're often in remote locations, the soft soil makes them inaccessible by car and firefighters need huge amounts of water—often pumped below ground—to get at subterranean blazes.

Indonesia has deployed water-bombing helicopters, but the onset of the rainy season, which usually starts in October, could be the only thing able to douse the fires.

"When you're dealing with large areas of peat burning it's just so expensive to bring in large quantities of water," said Michael Brady, an Indonesia-based peatlands expert at the Center for International Forestry Research.



Some of the most serious fires happen in carbon-rich peatlands

"Water-bombing is not very effective because you just can't drop enough water" to douse them, he added.

Satellite radar used to find hotspots—areas of intense heat which indicate a high chance of fire—does not always pinpoint below-ground blazes.

"It may not show up as a hotspot...(because) there might not be enough heat at the surface of the ground," Brady said.

"So, one of the challenges is just to detect them."

### 'Not going away'

Authorities are beefing up law enforcement to catch those responsible for illegal burning and have moved to restore degraded peatland forests—a key buffer against annual flooding and home to endangered species, including Sumatran orangutans.

But despite Indonesia's progress over the past few decades, fighting fires is still a challenge even for countries like the United States, Canada and Australia which have some of the top technologies and fire prevention programmes, Brady said.

"This is not going to go away," he added.

"We're not going to find a solution to eliminate fires on the landscape completely and we're not going to 'tackle' it. This requires an ongoing investment."

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