

Press release: Embargoed until 00:01 GMT on Thursday 13 November 2025 (21:01 Brasilia Standard Time on Wednesday 12 November)

Fossil fuel CO₂ emissions hit record high in 2025

Global carbon emissions from fossil fuels are projected to rise by 1.1% in 2025 – reaching a record high, according to new research by the Global Carbon Project.

The 2025 Global Carbon Budget projects 38.1 billion tonnes of fossil carbon dioxide (CO₂) emissions this year.

Decarbonisation of energy systems is progressing in many countries – but this is not enough to offset the growth in global energy demand.

With projected emissions from land-use change (such as deforestation) down to 4.1 billion tonnes in 2025, total CO₂ emissions are projected to be slightly lower than last year.

With the end of the 2023-24 El Niño weather pattern – which causes heat and drought in many regions – the land “sink” (absorption of CO₂ by natural ecosystems) recovered this year to the pre-El Niño level.

This year’s report – published alongside a new paper in the journal *Nature* – examines the impact of climate change on the land and ocean carbon sinks. It finds that 8% of the rise in atmospheric CO₂ concentration since 1960 is due to climate change weakening the land and ocean sinks.

The report says the remaining carbon budget to limit global warming to 1.5°C is “virtually exhausted”.

With no sign of the urgently needed decline of global emissions, the level of CO₂ in the atmosphere – and the dangerous impacts of global warming – continue to increase.

The research team included the University of Exeter, the University of East Anglia (UEA), CICERO Center for International Climate Research, Ludwig-Maximilian-University Munich (LMU), Alfred-Wegener-Institut and more than 90 other institutions around the world.

“With CO₂ emissions still increasing, keeping global warming below 1.5°C is no longer plausible,” said Professor Pierre Friedlingstein, of Exeter’s [Global Systems Institute](#), who led the study.

“The remaining carbon budget for 1.5°C, 170 billion tonnes of carbon dioxide, will be gone before 2030 at current emission rate. We estimate that climate change is now reducing the combined land and ocean sinks - a clear signal from Planet Earth that we need to dramatically reduce emissions.”

Professor Corinne Le Quéré, Royal Society Research Professor at UEA’s School of Environmental Sciences, said: “Efforts to tackle climate change are visible, with 35 countries succeeding in reducing their emissions while growing their economies, twice as much as a decade ago, and important progress in reducing reliance on fossil fuels elsewhere. Progress is still much too fragile to translate into the sustained decreases in global emissions needed to tackle climate change. The emerging impacts of climate change on the carbon sinks is worrying and stresses further the need for urgent action.”

Glen Peters, Senior Researcher at the CICERO Center for International Climate Research, said: "It is 10 years since the Paris Agreement was negotiated, and despite progress on many fronts, fossil CO₂ emissions continue their relentless rise. Climate change and variability are also having a discernable effect on our natural climate sinks. It is clear countries need to lift their game. We now have strong evidence that clean technologies help reduce emissions while being cost effective compared to fossil alternatives."

Professor Julia Pongratz, at LMU's Department of Geography, said: "The reduction in land-use emissions demonstrates the success that environmental policies can achieve. Deforestation rates in the Amazon have declined and are at their lowest level this season since 2014. Yet the sweeping fires in 2024 revealed how sensitive the ecosystem remains if we don't also limit global warming."

Other key findings from the 2025 Global Carbon Budget include:

- **China's** emissions in 2025 are projected to increase by 0.4% – growing more slowly than in recent years, due to a moderate growth in energy consumption combined with an extraordinary growth in renewable energy.
- **India's** emissions are projected to increase by 1.4% – also slower than recent trends. An early monsoon reduced cooling requirements in the hottest months. Combined with strong growth in renewables, this led to very low growth in coal consumption.
- Emissions are projected to grow in the **USA** (+1.9%) and the **European Union** (0.4%) in 2025. Emissions in these regions have declined in recent years, but colder weather and other factors led to an increase in 2025.
- Projected emissions in **Japan**, provided this year for the first time, are down 2.2% in line with recent trends.
- Emissions for the **rest of the world** are projected to increase by 1.1%.
- The projected rise in fossil CO₂ emissions in 2025 is driven by all fuel types: **coal** +0.8%, **oil** +1%, **natural gas** +1.3%.
- Emissions are projected to increase by 6.8% for **international aviation** (exceeding pre-COVID levels) but to remain flat for **international shipping**.
- Over the 2015-2024 period, emissions from permanent **deforestation** remain high at around 4 billion tonnes of CO₂ per year, while permanent removals through **re/afforestation and forest regrowth** offsets about half of the permanent deforestation emissions.
- **Total CO₂ emissions** – the sum of fossil and land-use change emissions – have grown more slowly in the past decade (0.3% per year), compared to the previous decade (1.9% per year).
- The **remaining carbon budget** to limit global warming to 1.5°C is virtually exhausted. The remaining budget for 1.5°C is 170 billion tonnes of CO₂, equivalent to four years at the 2025 emissions levels.
- The combined effects of climate change and deforestation have turned Southeast Asian and large parts of South American tropical forests from CO₂ sinks to sources.
- The **concentration of CO₂ in the atmosphere** is set to reach 425.7 ppm in 2025, 52% above pre-industrial levels.

The Global Carbon Budget report, produced by an international team of more than 130 scientists, provides an annual, peer-reviewed update, building on established methodologies in a fully transparent manner.

The 2025 edition (the 20th annual report) will be published in the journal *Earth System Science Data* on November 13 as a pre-print, and later as a peer-reviewed paper.

The *Nature* paper - entitled: “Emerging climate impact on carbon sinks in a consolidated carbon budget” - will have an Accelerated Article Preview (AAP) publication on 12 November 2025 at 16:00 (London time).

Ends

Interviews:

The following speakers are available for interview (names in *italic* will be at COP30): Pierre Friedlingstein, Corinne Le Quéré, Julia Pongratz, Glen Peters, *Stephen Sitch*, *Thais Rosan*, Mike O’Sullivan, *Matt Jones*, Judith Hauck, Philippe Ciais. To request interviews or further information, please contact Alex Morrison in the University of Exeter press office: pressoffice@exeter.ac.uk or +44 7825 770679.

Data Availability:

All material, including a more detailed key messages document, publications, data, figures (including by country), are available under embargo on the following link: https://drive.google.com/drive/folders/1leL34aF-U-JOfgkGcOXgm4tKzyz2FK5Y?usp=drive_link

Once published, the *Nature* paper will be available at: <https://www.nature.com/articles/s41586-025-09802-5>

Events at COP30:

- *University of Exeter: Launch of the Global Carbon Budget 2025*: UNFCCC press conference at COP30 in Belém, Brazil. Location: Press Conference 2, Area D. Date & time: 13 November 2025, 10:00-10:30 (Brasilia time) / 13:00-13:30 (GMT).
- *Climate Science: 2025 Global Carbon Budget and The Global South*: Professor Stephen Sitch and Dr Thaís Rosan will present the findings of the 2025 Global Carbon Budget. Location: Coalition for Rainforest Nations Pavilion at COP30. Date & time: 13 November 2025, 14:15-15:00 (Brasilia time) / 17:15-18:00 (GMT). The University of Exeter is a partner of the [Coalition for Rainforest Nations Pavilion](#).

Online media briefings:

- **UK**: Tuesday 11 November, 10:00 GMT. Science Media Centre online news briefing. Contact: smc@sciencemediacentre.org
- **Germany**: Tuesday 11 November, 12:30 CET (11:30 GMT). Science Media Centre online press briefing. Contact: redaktion@sciencemediacenter.de
- **Spain**: Tuesday 11 November. 10:00 CET. Spanish Science Media Center. Contact: laura.chaparro@fecyt.es
- **France**: Wednesday 12 November, 12:00 CET (11:00 GMT). Contact: florence.bardin@agencef.com
- **Australia**: Wednesday 12 November: 10:30 a.m. Australia, Sydney (00:30 CET). Australian Science Media Center: AusSMC Info@smc.org.au