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Global Carbon Project
Briefing on key messages from the Global Carbon Budget 2026

EMBARGO until 01:00 GMT (London time) Tuesday November 10

The Global Carbon Project is an international research project within the Future Earth research initiative on global sustainability, and a research partner of the World Climate Research Programme. It aims to develop a complete picture of the global carbon cycle, including both its biophysical and human dimensions, together with the interactions and feedbacks between them. The Global Carbon Budget 2026 is the 21th edition of the annual update, which started in 2006, and the 15th edition with data made available as a living data collection in the journal *Earth System Science Data*.

Data and methods are detailed in the publications (see links provided at the end of this document).

A. Headline:

Fossil CO_2 emissions are set to decrease in 2026 as clean energy expands and the Iran conflict reduces oil use

- **Global fossil CO_2 emissions are projected to marginally decrease in 2026.** The 0.4% decrease (range –1.5% to 0.6%) is driven by the growing deployment of clean energy along with a widespread decrease in oil emissions, likely a short-term response to the energy shock triggered by the Iran conflict.
- **Solar and wind power and electric vehicles now offset about two-thirds of emissions from increasing energy demand.** Further acceleration of clean technologies is needed for global fossil CO_2 emissions to peak and decline durably.
- **Global CO_2 emissions from land-use change have decreased in the past decade, but are set to rise this year.** The 2026 rise is driven by peat fires and forest degradation in Southeast Asia, associated with drier conditions linked to the onset of El Niño conditions.
- **Total CO_2 emissions – the sum of fossil and land-use change emissions – have grown more slowly in the past decade compared to the previous decade.** The average annual growth was 0.3% over 2016-2025, compared to 1.7% the previous decade.
- **The remaining carbon budget to limit global warming to 1.5°C is virtually exhausted.** With a warming of the planet attributed to human activities of 1.37°C in 2025, the remaining budget for 1.5°C is 150 $GtCO_2$, equivalent to less than 4 years at the 2026 emissions levels.
- **The land carbon sink has returned to its pre-El Niño levels after a severe weakening during the 2023-2024 event, with the effect of the current El Niño expected next year.** The land and ocean have taken up 49% of total anthropogenic emissions in the past decade, but both sinks are negatively impacted by climate change.
- **The concentration of CO_2 in the atmosphere is set to reach 427.7 parts per million in 2026, 54% above pre-industrial level.** Atmospheric CO_2 concentration is projected to grow by 2.2 ppm in 2026, further increasing the human influence on climate.

B. CO_2 emissions

Preliminary data for 2026 show global fossil CO_2 emissions are set to decrease 0.4% (range –1.5% to 0.6%) relative to their 2025 level

- **The projected 2026 decrease brings global fossil CO_2 emissions to 38.2 billion tonnes of CO_2 ($GtCO_2$)[1].** Updated data for 2025 show global fossil emissions increased 1.2% above 2024 levels.
- **The projected 2026 decrease is driven predominantly by a decrease in oil emissions.**
    - Oil emissions are projected to decrease by 1.9% (range –2.6% to –1.2%), with decreases in all major world regions as well as in international shipping and aviation (Table 1).
    - Natural gas emissions are projected to decrease 0.3% (range –1.6% to +0.9%), with a decrease in China offset by an increase in the USA, and a mixed picture globally.
    - Coal emissions are projected to rise by 0.6% (range –0.6% to +1.7%), with a strong increase in India partly offset by strong decreases in the USA and European Union (EU27).
- **Emissions are projected to decrease in most major world regions as well as in international shipping and aviation, triggered by decreases in oil emissions.**
    - In China (32% of global emissions), emissions in 2026 are projected to decrease by 0.9% (range –2.6% to +0.8%) over 2025 (Table 2). This decrease follows two years of low emissions growth. In addition to a strong decrease in oil emissions, emissions from coal rose only mildly (0.3%) as electricity generation from renewables continues to grow strongly and summer temperatures were milder than 2025's record highs, reducing the need for cooling.
    - In the United States (13% of global emissions), emissions in 2026 are projected to decrease by 1.3% (–3.4% to +0.8%) over 2025. This decrease is driven primarily by a decrease in coal emissions after an unusual increase in 2025 largely driven by high natural gas prices and cold weather, further enhanced by a decrease in oil partly offset by a small increase in gas emissions.
    - In India (8% of global emissions), emissions in 2026 are projected to increase by 4.4% (1.7% to 7.1%) over 2025, above the 3.5% average annual growth over the last decade (Table 3). This partly reflects a rebound from low emissions growth in 2025, when a wet pre-monsoon period reduced cooling demand, followed by a dry monsoon in 2026 with higher temperatures increasing cooling demand. The Indian economy continues to grow strongly with an emphasis on infrastructure development. Since the government fixes petrol and diesel prices, the closure of the Strait of Hormuz has not led to a drop in road-transport emissions, but consumption of other oil products declined.
    - In the European Union (6% of global emissions), emissions in 2026 are projected to decrease by 1.5% (–4.0% to +0.9%) over 2025, below the trend of the past decade (Table 3). While diesel prices have risen in some countries, others have introduced measures to

[1] Global fossil CO_2 emissions include the cement carbonation sink.

keep prices down. Record heat in summer in Western Europe led to higher demand for cooling. Uncertainty is high, particularly with emissions from oil.

- In Japan (2.5% of global emissions), emissions in 2026 are projected to decrease by 1.0% (–2.5% to +0.6%). This continues the trend, as transport gradually becomes more efficient, the population ages, and nuclear power stations are brought back online. The government of Japan fixes road-fuel prices, so there has been no direct consequence of the global supply issues for road-transport emissions, but oil use in the petrochemicals sector dropped sharply for a short period.

- Emissions are also projected to decrease by 1% for both international aviation (1.5% of global emissions) and international shipping (1.7% of global emissions). Aviation's decline is partly a direct result of less aviation activity in the Middle East.

- For the Rest of the World in aggregate (38% of global emissions), emissions in 2026 are projected to decrease by 0.7% (–2.9% to +1.5%) over 2025. The largest component of the decline is in oil, likely driven by increased prices and global supply constraints.

- **Decarbonisation of energy systems is progressing but not fast enough to durably secure a peak and decline in global fossil CO_2 emissions.**

  - The number of countries reducing their emissions while growing their economies is increasing. 40 economies have decreased their fossil CO_2 emissions significantly while growing their economies in the decade 2016-2025[2], nearly twice as many as during the previous decade (2006-2015; 22 countries)[3]. These 40 countries account for 26% of current global fossil CO_2 emissions. Emissions reductions expanded to 59 countries in all continents for the shorter 2019-2025 time period, although not all of these trends are significant (See key Figures below).

  - Avoided emissions from solar and wind power and electric vehicles are projected to grow about 0.5 $GtCO_2$ in 2026, offsetting about two-thirds of the emissions growth from rising demand. This estimate is provided here for the first time.

  - In 2025, solar and wind power accounted for about 95% of the avoided emissions, in roughly equal proportion.

  - The effect of electric vehicles is growing rapidly but remains small, because the vehicle stock takes time to turn over, with only about 10% of the car fleet electrified in 2025 (6% excluding non-plug-in hybrids), and far less for vans and trucks. Despite their low numbers, other electric vehicles (mainly buses and trucks in China) account for about 30% of the emissions

[2] Note a method change was introduced this year, which influences the total number of countries in the list. This year's list includes: Albania, Australia, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Cameroon, Chile, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland, Thailand, United Kingdom, USA, Venezuela.

[3] The following countries were added to the list in 2016-2025 compared to 2006-2015: Albania, Australia, Belarus, Bosnia and Herzegovina, Cameroon, Chile, Denmark, Estonia, Finland, Greece, Hungary, Ireland, Italy, Japan, Latvia, New Zealand, Norway, Portugal, Slovenia, South Korea, Spain, Thailand, Venezuela. The following countries were removed: Malta, North Macedonia, Tonga, Tuvalu, and Uzbekistan.

avoided by EVs, because each replaces a vehicle with much higher fuel use.

- China accounts for about half of the global avoided emissions in the energy sector, for both solar and wind power and for electric vehicles.
- The growth in solar and wind energy in electricity is the dominant contributor to the reduction in fossil CO_2 emissions growth in the last decade (from 1.9% to 0.9%, Table 3).
- Continued deployment of clean technologies to 2028 at current or accelerated rate would offset 64%–79% of the emissions growth from rising demand. This is not enough to guarantee a peak and subsequent decline in global emissions if oil prices rebound to their levels prior to the Iran conflict.

Net CO_2 emissions from land-use change and land management[4] remain high, but they have decreased in the past decade

- **Global net CO_2 emissions from land-use change averaged 4.9 $GtCO_2$ per year for the past decade (2016-2025).**
  - Emissions from permanent deforestation, the main driver of global gross sources from land-use change, remain high at around 3.8 $GtCO_2$ per year over 2016-2025. Permanent removals through re/afforestation offset around half of the permanent deforestation emissions (2.1 $GtCO_2$ per year).
  - Wood harvest and other forest management contribute net emissions of 1.5 $GtCO_2$ per year, with larger gross emissions offset by forest regrowth. Peat drainage and peat fires contribute a further 0.8 $GtCO_2$ per year, while transitions between cropland, pasture and urban areas contribute net emissions of 0.2 $GtCO_2$ per year, averaged over 2016-2025.
  - Brazil, Indonesia, and the Democratic Republic of the Congo together contribute 2.6 $GtCO_2$ per year on average over the last decade, 54% of the global net land-use change CO_2 emissions. They constitute the countries with the largest emissions from permanent deforestation (Table 4).
  - The largest carbon uptake through re/afforestations occurs in China, the EU27, and the USA, with combined removals of 0.8 $GtCO_2$ per year. Substantial uptake through re/afforestation also occurs in other regions such as Brazil, Russia, or Indonesia, where it is, however, outweighed by emissions from deforestation.
- **Global CO_2 emissions from land-use change have decreased in the past decade, but are set to rise this year.**
  - The global net CO_2 emissions from land-use change have decreased from an annual rate of 6.2 $GtCO_2$ during 2006-2015 to 4.9 $GtCO_2$ in the past decade. This continues the decrease in land-use change emissions since their peak in the late 1990s.
  - Preliminary data suggest net emissions will increase to 5.1 $GtCO_2$ in 2026 driven by an

[4] Net CO_2 emissions from land-use change refer to emissions, but also removals, from land-use, land-use change and land management, such as deforestation, re/aforestation, wood harvest, shifting cultivations and other land management.

increase in emissions from peat fires (almost entirely ignited by human activities) and forest degradation in Southeast Asia, associated with drier conditions linked to the onset of El Niño conditions.

- **Besides conventional carbon dioxide removal (CDR) through re/afforestation and storage in long-lived harvested wood products, small levels of novel CDR occur through a variety of methods.**
    - Vegetation-based CDR methods, primarily biochar and bioenergy with carbon capture and storage (CCS), accounted for removals of about 0.002 $GtCO_2$ in 2025.
    - Non-vegetation-based CDR transfers carbon from the atmosphere to the geosphere amounted to about 0.00001 $GtCO_2$ in 2025, primarily through enhanced rock weathering and alkalinity enhancement of water bodies, with a smaller contribution from direct air carbon capture and storage.
- **Total CO_2 emissions from fossil use and land-use change combined have grown more slowly in the past decade, compared to the previous decade**
    - Total emissions have grown annually by 0.3% over the past decade (2016-2025), compared to 1.7% in the previous decade (2006-2015).
    - Total emissions are projected to be 43.3 billion tonnes of CO_2 in 2026, slightly higher than the 2025 level of 42.8 billion tonnes of CO_2. The small decline in fossil CO_2 emissions in 2026 is compensated by an increase in land-use change CO_2 emissions, although the projection of this latter has a lower confidence.

The remaining carbon budget to limit global warming to 1.5°C is virtually exhausted

- **Each additional cumulative emission of about 220 $GtCO_2$ (about 5 years at the 2026 emissions levels) will lead to approximately 0.1°C of additional warming.**
    - For a 50% likelihood of limiting warming below 1.5°C, the remaining budget is 150 $GtCO_2$, equivalent to less than 4 years at the 2026 emissions levels, consistent with the warming of the planet attributed to human activities, which reached 1.37°C in 2025 [5].
    - The remaining carbon budgets to limit warming to 1.7°C and 2°C above the 1850-1900 level have been reduced to 510 $GtCO_2$ and 1035 $GtCO_2$, 12 years and 24 years at 2026 emissions levels respectively.
- **Novel removals would need to scale up rapidly if they are to play a role in reducing warming levels after overshooting temperature goals.**
    - Novel CDR currently offset less than 30 minutes of annual fossil CO_2 emissions.

[5] The temperature contribution is from https://essd.copernicus.org/articles/18/3889/2026/

C. Atmospheric CO_2 accumulation and the natural carbon sinks

The land and ocean sinks have been relatively stagnant for a decade or more, with a strong influence of climate change trends

- The land and ocean have taken up 49% of anthropogenic emissions in the past decade, 22% and 27% respectively.
- The land and ocean CO_2 sink are 19% and 8% smaller, respectively, than they would have been without the effects of climate change and variability, on average for the 2016-2025 period. This is equivalent to a reduction of nearly 20% in the combined land and ocean sink.
- The ocean CO_2 sink has been relatively stagnant since 2016, largely in response to climate variability modulating the growing sink trend. The preliminary estimate for 2026 is similar to the 2025 ocean sink.
- The land CO_2 sink has been relatively stagnant since 2000, largely in response to climate variability and climate change offsetting the CO_2-induced growth.

The land carbon sink has returned to its pre-El Niño levels after a severe response to the 2023-2024 event, with the effect of the 2026-2027 El Niño expected in 2027

- The land sink weakened substantially in 2024 due to El Niño conditions, but returned fully in 2025 to its pre-El Niño level. Preliminary estimates indicate a further strengthening of the land sink over the full 2026.
- Although a large El Niño event began in June 2026 and is gathering strength, its effects on the CO_2 sinks are not yet fully visible as changes in the carbon cycle lag several months behind changes in climate conditions.
- So far in 2026, global fire CO_2 emissions have been close to their 2016-2025 average, due to higher fire activity in Southeast Asia, but lower activity in South and North America[6].

The concentration of CO_2 in the atmosphere is set to reach 427.7 ppm in 2026, 54% above pre-industrial levels

- Atmospheric CO_2 is projected to rise 2.2 ppm in 2026, following a similar rise of 2.1 ppm in 2025 and further increasing the human influence on climate. These relatively low increases follow the record-high increase of 3.7 ppm in 2024, with year-to-year variations driven primarily by the land sink response to El Niño conditions.

[6] Global fire CO_2 emissions are presented alongside the global carbon budget analysis to give an indication of their scale. Direct comparison cannot be made between the reported fire CO_2 emissions and other components of the budget (such as the land sink and land-use change emissions) as these components already account for some types of fires.

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Accompanying tables and figures

Table 1. Projected change in fossil CO2 emissions by fuel type in million tonnes CO2 (percent in parenthesis) for 2026 compared to 2025. RoW stands for Rest of the World in aggregate (excluding international shipping and aviation (IAS)). World values include cement carbonation and IAS. The cement carbonation sink decreased by 32 MtCO2 in 2026

Country	Total	Coal	Oil	Gas	Cement
World	-158 (-0.4%)	+90 (+0.6%)	-243 (-1.9%)	-27 (-0.3%)	-8 (-0.6%)
China	-107 (-0.9%)	+26 (+0.3%)	-89 (-4.6%)	-8 (-0.9%)	-36 (-6.2%)
USA	-64 (-1.3%)	-51 (-6.7%)	-24 (-1.1%)	+8 (+0.5%)	+2 (+6.2%)
India	+141 (+4.4%)	+126 (+5.9%)	-7 (-0.9%)	+3 (+2.2%)	+18 (+9.0%)
EU27	-37 (-1.5%)	-14 (-2.9%)	-22 (-1.8%)	-0.4 (-0.1%)	-1 (-1.8%)
Japan	-9 (-1.0%)	+7 (+1.7%)	-8 (-2.2%)	-7 (-4.0%)	-1 (-3.1%)
Intnl. Aviation	-6 (-1.0%)	n.a.	-6 (-1.0%)	n.a.	n.a.
Intnl. Shipping	-7 (-1.0%)	n.a.	-7 (-1.0%)	n.a.	n.a.
RoW	-100 (-0.7%)	-5 (-0.2%)	-82 (-1.6%)	-23 (-0.5%)	+9 (+1.6%)

Table 2. 2025 fossil CO2 emissions from top 20 countries including the European Union (EU27; together and separately) in billion tonnes CO2/yr, and, when available, projection of growth for 2026. World values include cement carbonation and IAS**.**

Country	2025 emissions (billion tonnes CO_2/yr)	2025 % of total	2025 per capita (tonnes CO2/pers/yr)	2025 growth (percent)	2026 projected growth (percent)
World	38.4	100%	4.7	1.2	-0.4% (-1.5% to 0.6%)
China	12.4	32.3%	8.8	0.4	-0.9% (-2.6% to 0.8%)
USA	5.0	13.1%	14.5	2.8	-1.3% (-3.4% to 0.8%)
India	3.2	8.3%	2.2	1.2	4.4% (1.7% to 7.1%)
EU27	2.4	6.3%	5.4	0.0	-1.5% (-4.0% to 0.9%)
Russia	1.8	4.6%	12.3	-0.9	n.a.
Japan	1.0	2.5%	7.8	-0.7	-1.0% (-2.5% to 0.6%)
Iran	0.9	2.2%	9.3	1.8	n.a.
Indonesia	0.8	2.1%	2.9	4.1	n.a.
Saudi Arabia	0.6	1.7%	18.5	1.5	n.a.
South Korea	0.6	1.5%	11.2	-0.4	n.a.
Germany	0.6	1.5%	6.8	0.2	n.a.
Canada	0.5	1.4%	13.6	1.6	n.a.
Brazil	0.5	1.3%	2.3	1.5	n.a.
Türkiye	0.5	1.3%	5.5	4.2	n.a.
Mexico	0.5	1.2%	3.6	0.2	n.a.
South Africa	0.5	1.2%	7.1	-1.0	n.a.
Australia	0.4	1.0%	14.0	-1.2	n.a.
Viet Nam	0.4	1.0%	3.7	5.1	n.a.
United Kingdom	0.3	0.8%	4.6	1.0	n.a.
Kazakhstan	0.3	0.8%	14.9	6.9	n.a.
International Aviation	0.6	1.5%	n.a.	6.4	-1%
International Shipping	0.7	1.7%	n.a.	3.3	-1%

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Table 3. Decadal growth in fossil CO_2 emissions (percent per year). World values include cement carbonation and IAS.

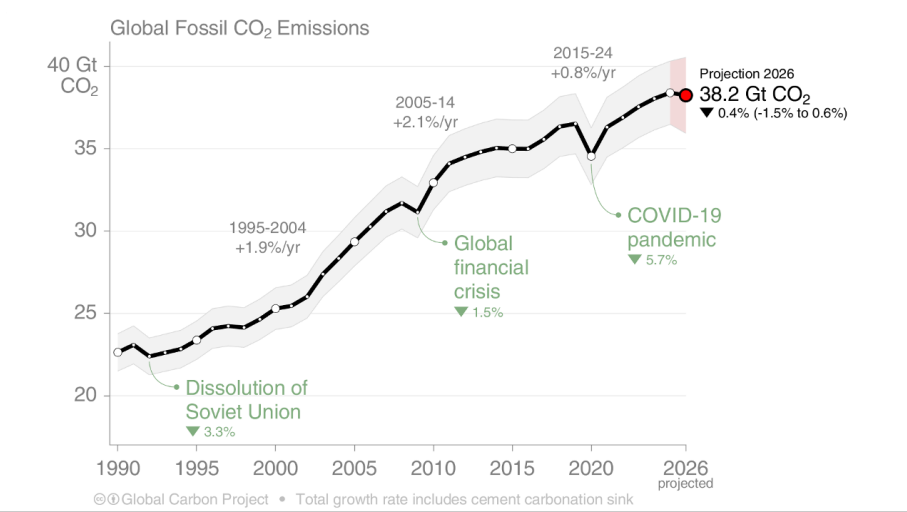
Decade	World	China	USA	India	EU27	OECD	Non-OECD	IAS	Rest of the World
2006-2015	1.9%	5.6%	-1.4%	6.3%	-2.3%	-1.0%	4.1%	1.7%	1.6%
2016-2025	0.9%	2.7%	-0.8%	3.5%	-2.9%	-1.4%	2.1%	-0.6%	0.4%

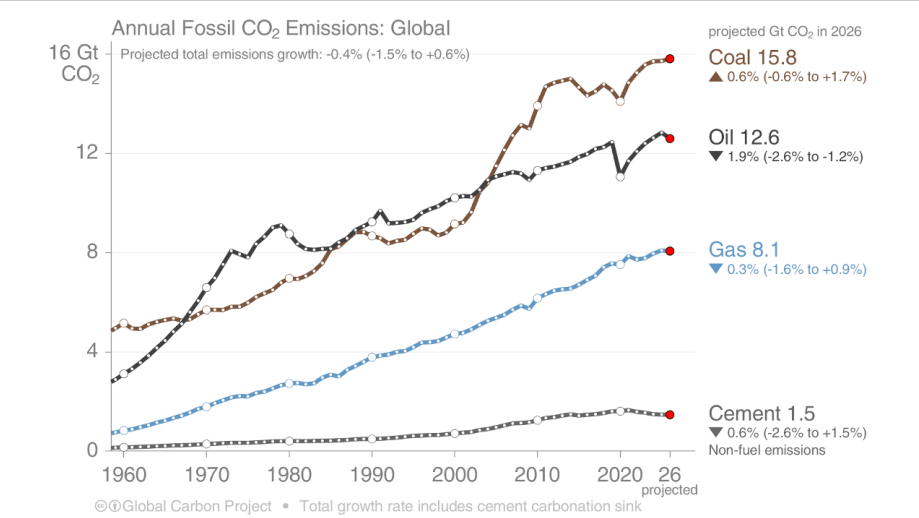
Table 4. Land-use change CO_2 emissions from top 10 countries, in billion tonnes CO_2/yr. Average over the 2016-2025 period.

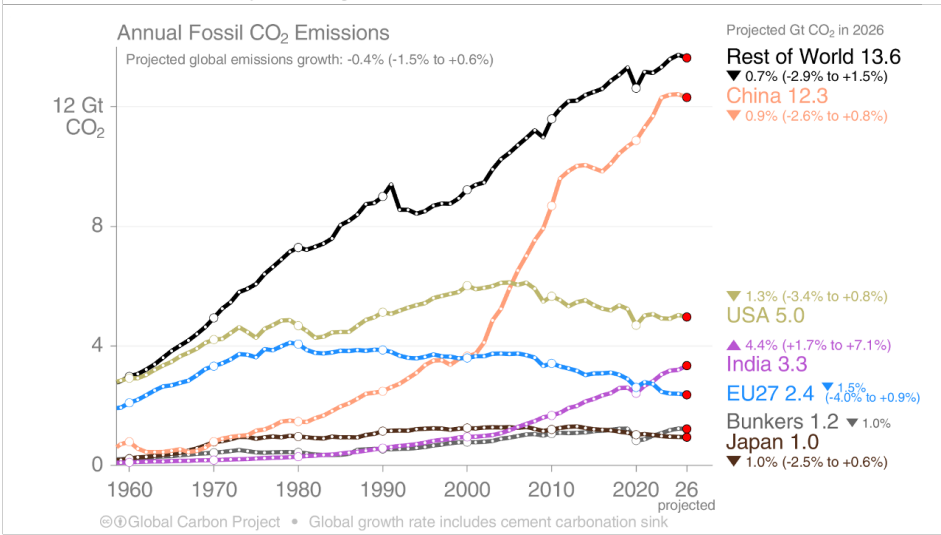
Country	Net Emissions (billion tonnes CO_2/yr)	% of global
Global	4.88	100.0%
Brazil	1.37	28.0%
Indonesia	0.70	14.3%
Democratic Republic of the Congo	0.56	11.4%
Russia	0.34	6.9%
Colombia	0.28	5.7%
Côte d'Ivoire	0.13	2.6%
Canada	0.11	2.2%
Viet Nam	0.10	2.1%
Myanmar	0.09	1.9%
Malaysia	0.08	1.7%

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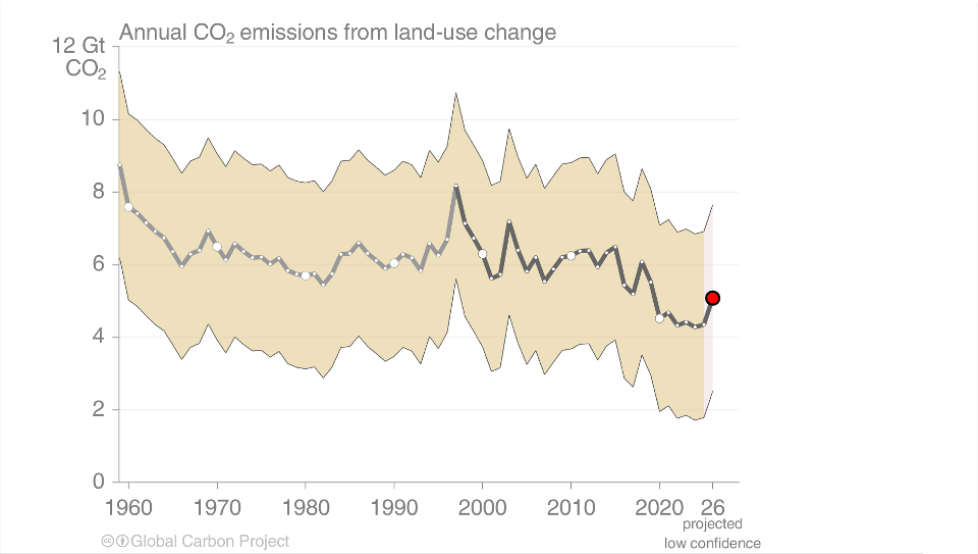
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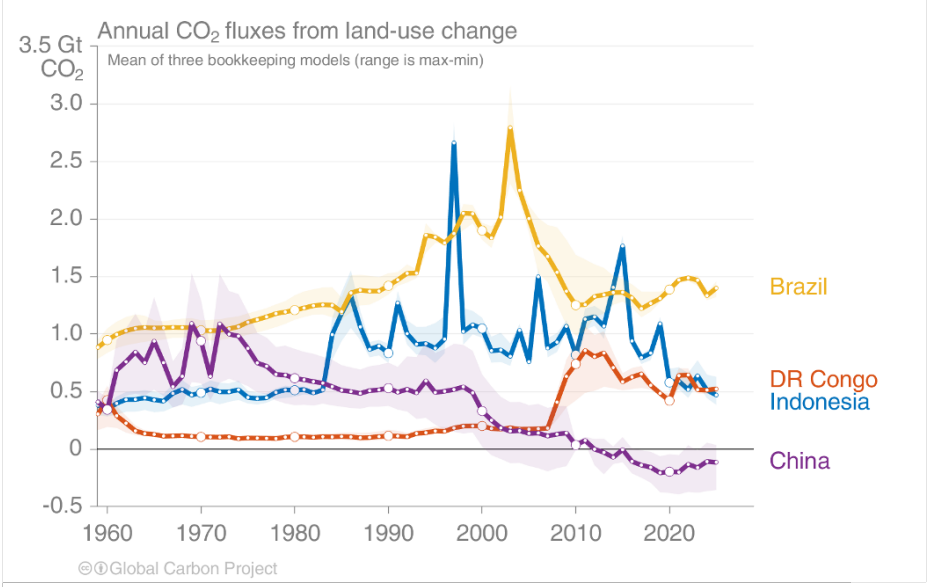


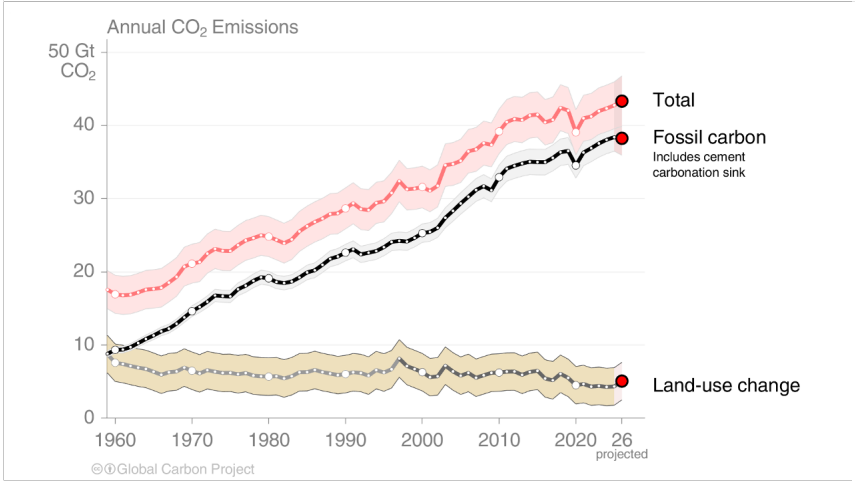




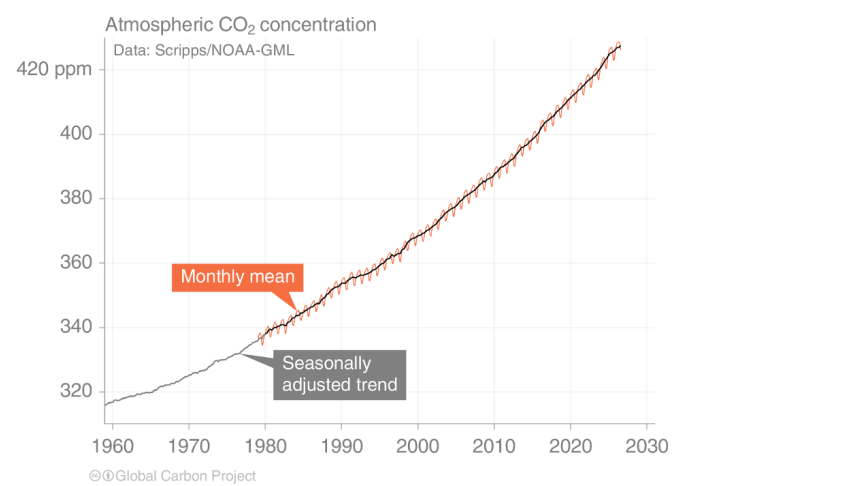
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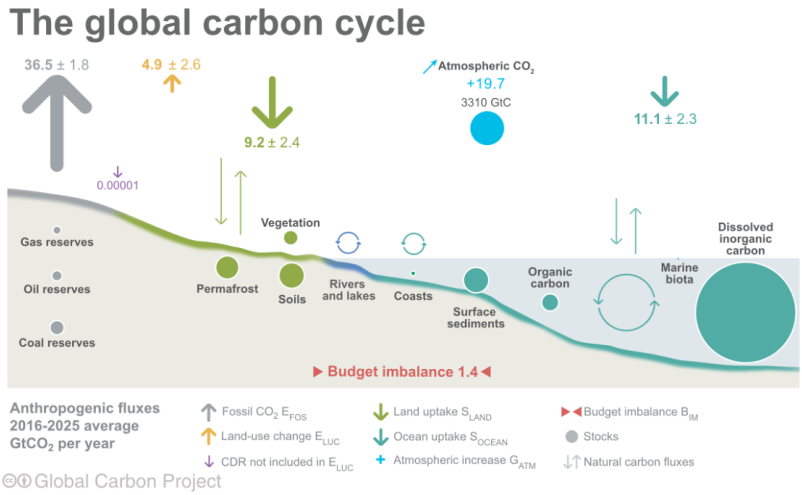


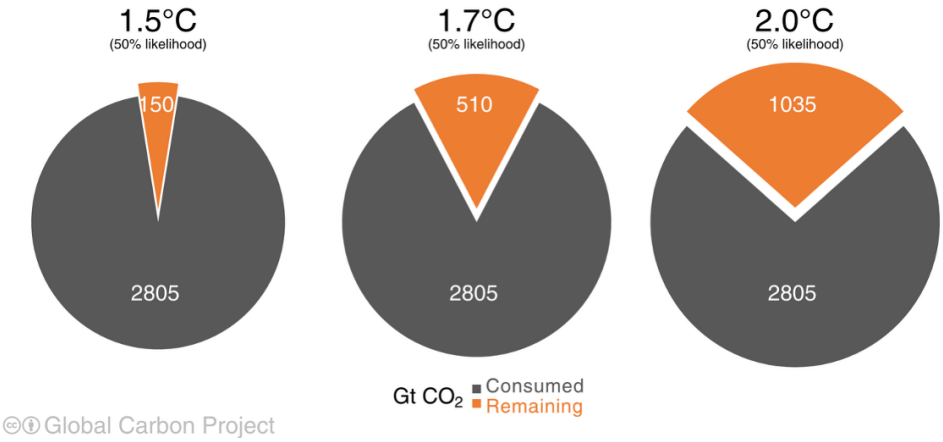




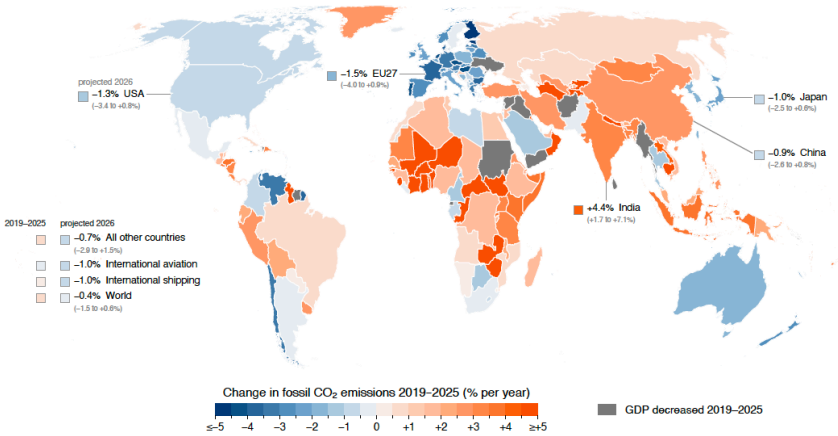
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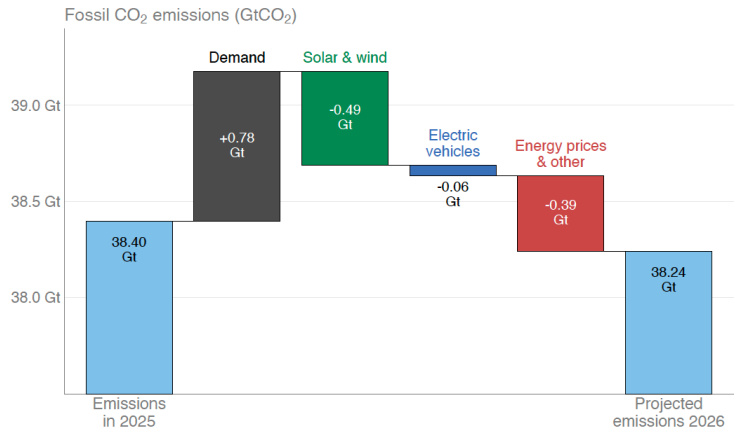






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This media release is part of the Global Carbon Budget 2026, the annual update by the Global Carbon Project. The Global Carbon Budget publication builds on established methodologies in a fully transparent manner. The 2026 edition is undergoing peer-review in the journal *Earth System Science Data*.
Friedlingstein et al. (2026) Global Carbon Budget 2026. *Earth System Science Data*. https://essd.copernicus.org/preprints/essd-2026-XXX Preprint under review accessible on 10 November 2026 at 01:00 (London time), see below for access prior to the embargo.

Nature Climate Change publication: Le Quéré et al. (2026) A further acceleration of clean energy is needed for global CO_2 emissions to peak and decline. https://dx.doi.org/10.1038/s41558-026-02821-8

DATA AVAILABILITY: All material, publications, data, figures (including by country), are available under embargo on the following link:
https://drive.google.com/drive/folders/18Y7QmmfngixnlD1kttBCX8JtuvWMbTOC?usp=drive_link

PRESS BRIEFINGS:

- **France**: Friday 6 November, 09:30 CET. Contact: florence.bardin@agencef.com
- **Spain**: Friday 6 November, 10:00 CET (09:00 GMT): Spanish Science Media Centre briefing. Contact: laura.chaparro@fecyt.es
- **UK**: Friday 6 November, 10:30 GMT. **Science Media Centre** online news briefings. Contact: smc@sciencemediacentre.org
- **Germany:** Friday 6 November 13:30 CET (12:30 GMT): German Science Media Centre briefing. Contact: Silvio.Wenzel@sciencemediacenter.de

EVENTS AT COP 31:

- Monday 9 November, 18:30-20:00 Turkey time (15:30-17:00 GMT), XXX. UN Side Event. Climate Action: Where Are We? Earth Observation, Global Carbon Budget (GCB) & Adaptation Indicators. Speakers include Corinne Le Quéré.
- Tuesday 10 November, 10:00-11:30 Turkey time (07:00-08.30 GMT), Press Conference Room 2, Area D4. University of Exeter press conference: Launch of the Global Carbon Budget 2026 Report. Speakers: Corinne Le Quéré, Pierre Friedlingstein and Mike O'Sullivan.
- Thursday 12 November, 09:30-10:30 Turkey time (06:30-07:30 GMT). Global Futures Pavilion. The Global Carbon Budget 2026: We Choose the Future They Inherit. Speakers: Pierre Friedlingstein, Corinne Le Quéré, Mike O'Sullivan. Chair: Amanda Ellis.

- Thursday 12 November, 14:00-15:00 Turkey time (11:00-12:00 GMT). Coalition for Rainforest Nations (CfRN) Pavilion. The Global Carbon Budget 2026. Speakers: Pierre Friedlingstein; Mike O'Sullivan; Corinne Le Quéré.

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