



Climate & Environment



Climate Update Report

Q4 – October-December 2025

Editorial Summary

“While the adoption of the Belem Action Mechanism and progress on the Global Goal on Adaptation offered meaningful steps forward, negotiations were overshadowed by unresolved divides on finance, equity, and implementation.” – [Concern](#), COP30 Outcomes: Wins, Gaps, and the Road Ahead – Laura Bahlman

The final quarter of 2025 provided a revealing snapshot of the current state of the global climate and climate politics. COP30 in Belém, Brazil, was presented as an opportunity to build momentum ahead of the Paris Agreement’s 10th anniversary. In practice, it highlighted the constraints under which multilateral climate diplomacy now operates. While negotiators advanced work on adaptation frameworks and some procedural mechanisms, discussions were overshadowed by unresolved differences over finance, equity, and implementation. Several major emitters played a limited role, or did not even officially attend, reinforcing that consensus is becoming harder to assemble. This has led to renewed calls for an alternative track to COP.

These diplomatic dynamics unfolded alongside a year of striking climate indicators as well. By December, scientists confirmed that 2025 would finish as the 2nd warmest year on record, tied with 2023 and just behind 2024. Three consecutive record-setting years suggest that recent extremes are no longer exceptional, with all of top 10 hottest years being in the past decade. Elevated global temperatures persisted even during a typical period of natural cooling, indicating that underlying warming trends continue to shape outcomes.

Emissions data points in a similar direction. Global emissions output continued to increase throughout the year, placing 2025 on track for a new record high. Expansion in renewable energy and efficiency gains appear to have moderated the pace of growth but not reversed it. Rising electricity demand, continued growth in transport, and sustained fossil-fuel use (particularly in power generation), remain central features of the global energy system.

At COP30, debates over climate finance and loss & damage again took center stage. Calls to scale support for climate-vulnerable countries featured prominently in formal outcomes, though questions remain over how such commitments will be financed and delivered. New political declarations highlighted emerging areas of cooperation, but their limited participation and non-binding character illustrated the gap between shared language and enforceable action. Trust between developed and developing countries remains uneven, shaping expectations ahead of COP31 and the next round of national pledges. This is further illustrated by the latest NDCs offering just ~15% of emissions reductions needed to stay below 1.5°C, as this window has already closed.

Climate-related risks with both security and economic implications continue to be apparent during the quarter. Water stress, extreme weather, and infrastructure vulnerability featured prominently across regions, reflecting the growing overlap between climate impacts and development challenges. Large-scale investments in resilience, particularly in water and disaster-risk reduction, provide examples of how adaptation is being pursued, though such efforts remain uneven across regions, with greater funding and climate equity needed.

Energy and technology trends reflected a similarly mixed picture. Renewables continued to benefit from cost competitiveness and expanding deployment, yet policy uncertainty in key markets slowed investment momentum. Nuclear energy re-entered strategic discussions as a potential stabilizing source of low-carbon power, while carbon capture and removal attracted renewed scrutiny over costs and effectiveness. Green hydrogen advanced selectively, constrained more by economics and regulation than by technical feasibility.

Overall, Q4 and 2025 in general underscored the widening distance between the scale of climate signals and the pace of political response. Progress remains evident in specific areas, but it is uneven and fragmented. For 2026, attention is shifting less toward whether solutions are available and more toward whether existing institutions can ever deploy them with sufficient speed and consistency to match emerging risks. The coming year is likely to test not just climate ambitions, but the credibility of the global governance architecture and international system itself, as physical impacts accelerate faster than the political systems designed to manage them.

Key Events

- Convention on Biological Diversity, Panama City, Panama. 27-30 October
- Montreal Protocol 37th Meeting of the Parties, MOP37, Nairobi, Kenya. 3-7 November
- UN Climate Change Conference, COP30, Belém, Brazil. 10-22 November

Key Reports

- IEA – [Renewables 2025](#), October
- UNEP – [Adaptation Gap Report 2025](#), October
- WRI – [State of Climate Action 2025](#), October
- Global Carbon Project – [Global Carbon Budget 2025](#), November
- IEA – [World Energy Outlook 2025](#), November
- UNEP – [Emissions Gap Report 2025](#), November

Carbon Emissions Data – Climate Trace

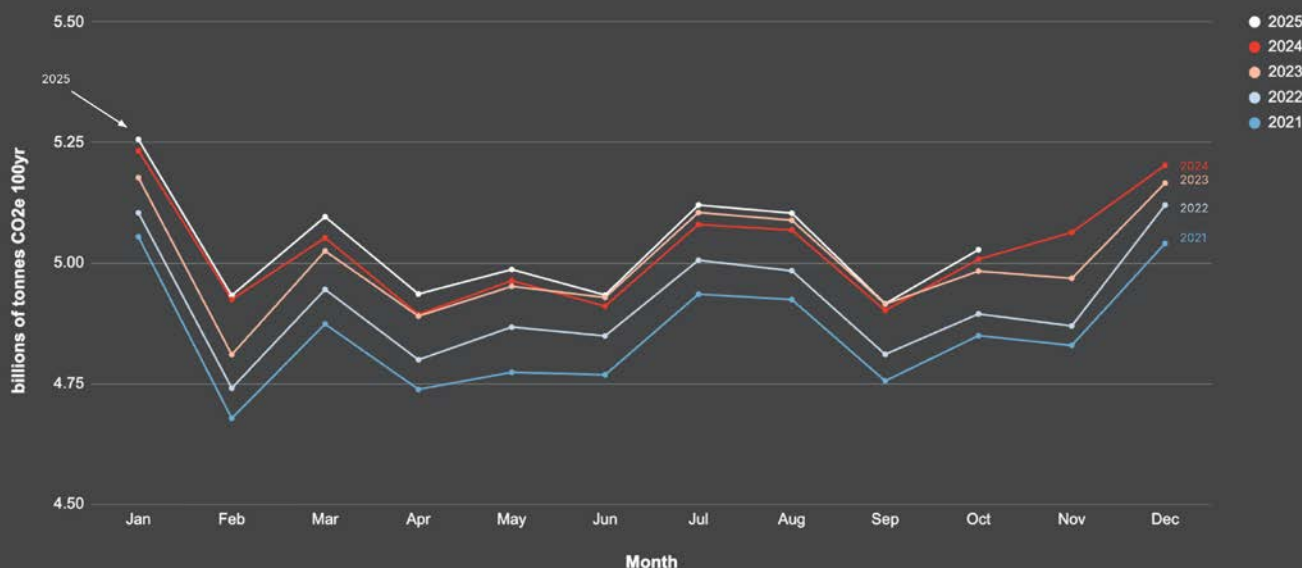
- Closing out 2025 with emissions data released up through October, carbon emissions continued to trend slightly higher than in 2024 for a new record level of **50.31** billion tons by October and remains at a pace to reach over 62.25 billion tons CO₂e in 2025 for a new record high and the first time over 62 billion.
 - **2021** – 60.03bn +2.79%
 - **2022** – 60.73bn +1.17%
 - **2023** – 61.59bn +1.42%
 - **2024** – 61.92bn +0.54%
 - **2025** – YTD—**50.31** billion tons CO₂e >> 62.26 bn pace (+0.55%)
 - **January** – 5.28bn -0.59%
 - **February** – 4.99bn +0.20%
 - **March** – 5.29bn +1.15%
 - **April** – 5.16bn +0.78%
 - **May** – 5.17bn +0.36%
 - **June** – 5.11bn +0.29%
 - **July** – 5.21bn +0.43%
 - **August** – 5.16bn +0.40%
 - **September** – 4.94bn +0.66%
 - **October** – 5.03bn +0.40%

- **Record Monthly Highs (Billion tCO₂e)**

	2025	2024	2023
August	5.10	5.07	5.09
September	4.92	4.90	4.91
October	5.03	5.01	4.98

- Top emitters China and the U.S. both increased, while India and EU decreased year-over-year—**China** +8.46mn (+0.60%), **U.S.** +3.51mn (+0.61%), **India** -1.63mn (-0.53%), **EU** -1.43mn (-0.46%), while **Russia** slightly decline -0.15mn (-0.05%). By sector most were unchanged, but Power, Waste and Transport increased: **Power** +1,283.56mn (0.81%), **Transport** +788.14mn (+1.13%), **Waste** +174.69mn (+0.35%).
- **Atmospheric CO₂** – Rising at +3 ppm per year – Record daily reading of **430.60** ppm on March 7, 2025.
 - December 30, 2022 – **419.10** ppm (+9.48, 2.26%)
 - December 30, 2023 – **422.33** ppm (+6.25, 1.48%)
 - December 30, 2024 – **425.72** ppm (+2.86, 0.67%)
 - December 30, 2025 – **428.44** ppm (+0.14, 0.03%)

Global monthly GHG emissions (Jan 2021 – Oct 2025)



CLIMATE TRACE

source: Climate TRACE data version 5.2.0 (released December 2025)

Total global year-to-date emissions (October 2025) of **50.31 billion** tons of CO₂e, published December 18, 2025.

Global Monthly Temperature Records – [NOAA NCEI](#)

- This year has seen 2025 appear in the top 3 hottest months on record every month to date with only December being 4th, and with most of the top 3 records now being in 2023, 2024 or 2025. This is even in the midst of a La Niña cooling period.

Hottest on Record	1st	2nd	3rd
January	2025	2024	2016
February	2024	2016	2025
March	2024	2016	2025
April	2024	2025	2020 , 2016
May	2024	2025	2020
June	2024	2023	2025
July	2024	2023	2025
August	2024	2023	2025
September	2023	2024	2025
October	2023	2024	2025
November	2023	2024	2025
December	2023	2024	2019, 2015

Decarbonization

- The number of [decarbonizing countries has doubled](#) to 35, with growing economies reducing their emissions from 2015-2024. This is up from 18 countries in 2004-2014 and represents 27% of global emissions per Global Carbon Project. However, the available carbon budget to keep below +1.5°C has effectively already been exhausted entering 2026.
- Australia's coal state Queensland reversed its plan to close [coal-fired](#) power plants and will keep them open for longer with AUD\$1.6bn over the next 5 years, affecting the nation's decarbonization targets. The state exports an eighth of the world's coal, which is still seeing record global consumption year-over-year.

MEDRC

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- Atmospheric CO₂ levels hit [new record high](#) levels in 2025 per the WMO, as well as methane and nitrous oxide. The rise across all three at an increasing pace shows the delayed onset from slowing emissions.

Climate Security Nexus

- **Water Security** – The Jordan [Aqaba-Amman](#) Water Desalination and Conveyance Project (AAWDPC) was approved for concessional financing from the Green Climate Fund worth USD\$300 million. The total project cost is USD\$6.3 billion consisting of loans and USD\$814 million as a grant. The project aims to desalinate 300 million m³ of water annually and pump it 440 kilometers to Amman to meet 40-45% of municipal demand. A further 281 MW of renewable energy will also be integrated with the project to cover 27% of energy requirements.
- **Energy Security** – The EU Parliament announced plans to [officially phase out](#) Russian LNG by the end of 2026, with a full ban on Russian pipeline gas by Autumn 2027. The move seeks to strengthen the EU's energy markets and gain greater energy independence and energy security across the continent. Prior to the Russian invasion of Ukraine in 2022, nearly 50% of EU energy imports came from Russian gas, with €99 billion spent in 2021. Efforts to curb these imports have increased since, with mixed results.
- **Food Security** – The World Food Program's latest update [Hunger Hotspots](#) warns of deteriorating food security in 16 countries over the coming year with Afghanistan, Somalia, and Syria re-entering the list. Sudan, South Sudan, Palestine, Mali and Haiti remain at the highest concern level, with Yemen being elevated to the highest level, with pockets projected to face Catastrophe/Famine food security outcomes. Beyond conflict and economic crises, weather extremes and climate variability are further exacerbating acute food insecurity.

Climate Diplomacy

- The outcomes of COP30 have focused on finding 'landing space' for many stalled issues, and focused on measures, mechanisms and reaffirming international cooperation. It has been largely disappointing again because it lacks substance or any binding agreements. The latest UNEP Emission Gap and Adaptation Gap reports told the story ahead of the meeting, "Off target" and "Running on Empty".
- COP30 [outcomes](#) include the "[Global mutirão](#)", non-binding pledge to include climate finance 3x, voluntary initiatives to accelerate climate action, greater recognition of indigenous peoples, and pledges to action from smaller entities such as states and cities. By the end, 119 countries accounting for 74% of emission released NDCs, but their commitments deliver just 15% of the emissions reductions required.
- One "landmark declaration" out the gate of COP30 was the "Declaration on [Information Integrity](#) on Climate Change at COP30", declaring a commitment to 'address climate disinformation and promote accurate information on climate issues', and was indorsed by a variety of countries, mainly from Europe.
- A likely more impactful landmark outcome is the Belem Declaration on [Global Green Industrialization](#), which draws from the outcomes of the Global Green Industrialization Dialogue earlier in the year in July 2025, to coordinate an institutional architecture and work program for the coordinated planning and scaling of new green industrial systems across governments, international organizations, the private sector, and academia. Green industrialization refers to decarbonizing industry and supply chains, and collectively means renewable energy technologies, energy storage, energy efficiency, circular production, and sustainable mining.
- India's request for [exemption](#) from the EU's CBAM (Carbon Border Adjustment Mechanism) is likely to be rejected, complicating efforts to seal a trade deal between the EU bloc and India. India has proposed using its own system, which the EU believes will not incentivize carbon reductions and sets a bad precedence for other countries. Carbon permits and prices are being interlinked with tariffs for goods and heavy industries, which reach up to 100% in India for some EU goods.
- The EU reached its own internal [legally binding agreement](#) to cut its emissions by 90% from 1990 levels by 2040, through a mix of reducing industrial emissions (85%) and buying carbon credits from

developing countries (5%). A potential further 5% of emission could be bought through international carbon credits within this agreement if domestic pressures are too great.

Climate Resilience

- 2025 is the 3rd-highest year for billion-dollar weather and climate disasters in the U.S. This comes from [Climate Central](#), taking over NOAA's Billion Dollar Weather & Climate Disaster dataset, after it was stopped in May 2025 after running for decades. The costliest is the LA wildfires from January at USD\$61.2bn, which were made worse by hot dry and windy conditions, but were first started by [arson](#). 23 events in total are listed, at a cost of USD\$115bn in total, with 2023 and 2024 ranked 1st and 2nd.
- An unusually [intense atmospheric river](#) and record rainfall caused catastrophic flooding across much of Washington state, prompting statewide emergency declarations, mass evacuations of tens of thousands of residents, dramatic water rescues, and widespread damage as rivers surged to historic levels and authorities mobilized National Guard and disaster response efforts.
- The [Race to Resilience 2025 progress report](#) states that 437 million people across 134 countries are living with improved climate resilience thanks to USD\$4.18 billion in scaled adaptation finance, marking a major milestone towards 2030 goals and the Global Goal on Adaptation. COP30 also showcased its Resilience Hub, further mainstreaming Climate Resilience in the political and technical discourse.

Renewable Energy

- The U.S. Energy Department on Wednesday canceled \$7.56 billion in funding for [223 projects](#) aimed at research and deployment of clean energy and other climate-friendly technology mainly in Democratic-led states. That includes [\\$20 billion from the Greenhouse Gas Reduction Fund](#), which supported investments in green technology like heat pumps and electric vehicles, and [\\$7 billion in the Solar for All program](#) to help low- and middle-income families install rooftop solar. Trump officials are also using [trade measures](#) and permit delays in a campaign to undercut the solar industry.
- An immense U.S. solar project known as Esmeralda 7 was [canceled](#). The project planned in the Nevada desert would have produced enough energy to power nearly two million homes. Meanwhile in China, solar installations were [up +30%](#) month-on-month from October to November. The record annual surge of 2024 of 277GW will likely be surpassed and closer to 300GW for 2025.
- It is a [new age for nuclear](#) in the U.S. with the DOE fast tracking reactor test pilot projects, hoping to achieve criticality for at least 3 test reactors by July 2026. The IEA's [World Energy Outlook 2025](#) highlights a global revival of nuclear energy, with output and capacity expected to grow significantly, and nuclear increasingly included in national energy strategies to complement renewables.
- Despite setbacks elsewhere, 2025 saw [record deployment](#) of renewables, historic generation numbers, and increasing battery storage capacity and usage, even in the U.S., led by California and Texas.

Carbon Capture & Removal

- A [paper](#) from the Universities of Oxford and Pennsylvania conducted over [25 years](#) claims carbon offsets have failed and most such projects should be phased out for failing to durably remove carbon and/or over estimating their removals by a factor of five to ten, or more. The recent [UN rules](#) meant to help improve this sector are found to have not substantially addressed this quality problem.
- The Global Status of CCS report from the Global CCS Institute states that despite headwinds and geopolitical uncertainties, [operational CCS projects](#) increased 54% year-on-year with 27 new facilities online in the past 12 months. This is seen as an inflection point for the CCUS industry as it has sought to move from concept to proven and deployed technology across the oil & gas industry. These headwinds refer to changing US Federal policy, which cancelled USD\$3.7 billion in carbon capture and decarbonizing funding including CCUS demonstrations. In the EU, projects are working across borders in [coordinated networks](#), bringing CO₂ from various sources, transported by ship or pipeline, and have been successfully injected in the North Sea, fully validating its custody from capture to storage.

- In durable carbon removal or CDR, the 1-million-ton mark in actual deliveries was crossed in August and has now reached [1.2mn tons](#), a key milestone for the market. Total CDR sales have reached 44M tons, or put another way, 2.8% of carbon removal purchases have been delivered. This represents 0.4356% of the 10 gigaton goal for CDR by 2050. The largest buyers of CDR are Microsoft at 34.5mn, followed by Frontier at 1.9mn and Google at 0.9mn.
- Encouraging CDR market signs include 50% of buyers in 2025 were first-time buyers, including Byte Dance (TikTok), with over USD\$2bn of private investment in DAC technology despite federal cutbacks. Several U.S. projects facing cuts have moved their operations to [Canada](#) for greater policy certainty.
- 44.01 of Oman, Sumitomo Mitsui and ENOES Xplora of Japan, have signed an [MOU](#) on carbon mineralization projects in the Middle East and Japan, hoping to expand the range of suitable geological formation for CO₂ injection and mineralization. 44.01's expertise with peridotite igneous rock in Oman will be leverage for potential sites in Japan.

Green Hydrogen

- Oman's Green Hydrogen Summit Oman took place over 3 days from 1-3 December, including a MEDRC closed Roundtable event sponsored by the Embassy of the Kingdom of the Netherlands in Oman. The Roundtable consisted of two sessions, Water and Transport, entitled Water-for-Hydrogen, and Port-to-Pavement. Key presentations included those of Asyad Logistics, Haskoning, Deltares, and Toyota.
- RWE began commissioning the first 100MW phase of its Lingen green hydrogen plant, the largest renewable hydrogen facility in Europe, marking a [significant scale-up](#) of electrolyzer deployment for industrial decarbonization and energy transition.
- The European Commission's Clean Hydrogen Partnership released its [2025 Programme Review Report](#), showcasing accelerated innovation, infrastructure progress, and alignment of EU hydrogen projects with major climate targets, bolstering regulatory and investment confidence in green hydrogen markets.
- China launched its first national [green hydrogen subsidy framework](#) via the National Development and Reform Commission, allowing state funds to cover up to 20% of capital expenditure for decarbonization projects, including green methanol, sustainable aviation fuels, green ammonia and green hydrogen.
- Plug Power's modular GenEco 5MW Electrolyzer was switched on in [Namibia](#) bringing Africa's first fully integrated commercial green hydrogen facility powered entirely by renewables. The site produces hydrogen to fuel its logistics hub from yard trucks, cargo crane, and small vessels.

Biodiversity

- The [Tropical Forests Forever Facility](#) officially launched on November 6th by Brazil ahead of COP30. A 'payment-for-performance' model uses satellite monitoring standards and systems to reward tropical forest countries with a continuing source of funding as long as they preserve their forests. The funding goal was set at USD\$125 billion, with \$25bn from governments and \$100bn from private financing. Brazil, Indonesia, France, Germany and Norway have pledged a total \$6.7bn, short of this target. If successful, this innovative nature financing model will reward countries for not deforesting and provide desperately needed revenue streams to some of the poorest countries.
- At the IUCN [World Conservation Congress](#) (9–15 October 2025), delegates adopted a new 20-year global conservation strategy ("Unite for Nature on the Path to 2045") and launched the IUCN Programme 2026–2029, marking a major global commitment to scale up biodiversity protection and integrate nature into policy and climate frameworks.
- UNESCO released a report showing how UNESCO [Biosphere Reserves](#) are advancing the Kunming-Montreal Global Biodiversity Framework's goals — a key demonstration of progress toward global biodiversity conservation targets.
- The Finance for Biodiversity Foundation launched its first [Impact Report](#), offering policy recommendations to align finance with the Global Biodiversity Framework and scale up investment in biodiversity conservation.

Climate Finance

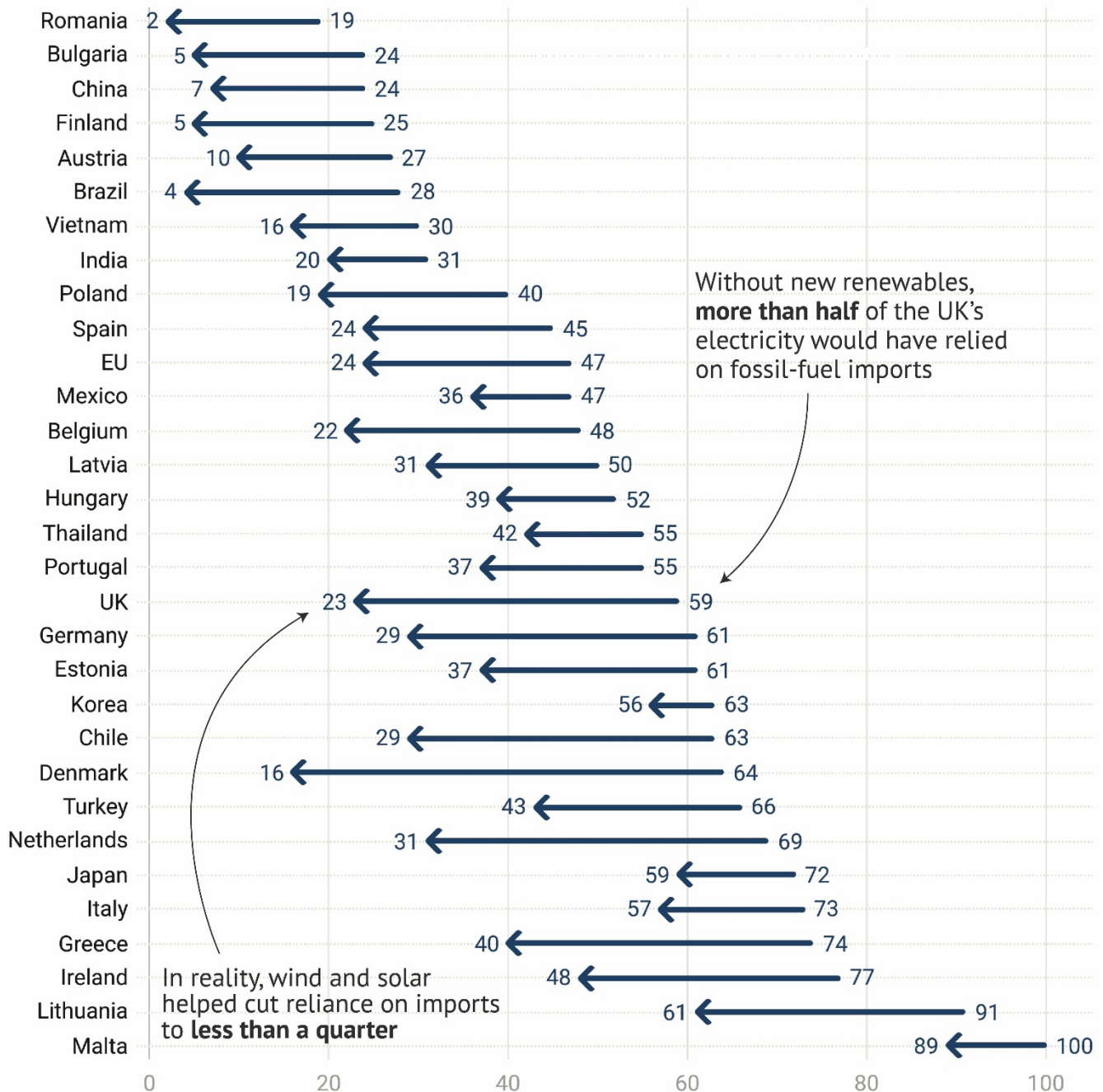
- Finance was not at the top of the agenda at COP30 yet was a dominating influence throughout all proceedings and became part of its final outcomes. COP30's "[Global mutirão](#)" called for tripling finance for climate-impacted countries by 2035 and reaffirmed past pleas to double by 2025. The COP30 outcome text emphasized scaling support for adaptation and resilience in developing nations.
- Much of the climate finance related issues at COP [relate back](#) to new targets set the prior year, including USD\$300bn per year and USD\$1.3tn by 2035, which funding parties like the EU, UK, and Japan claim they will struggle to meet due to domestic [fiscal pressures](#). A key point is that such funds must be public money and not counted by 'crowing-in' private investments or counting other investments per Article 9.
- The COP30 Presidency released the [Baku to Belem Roadmap](#), to provide coherence to the USD\$300bn per year and how the USD\$1.3tn will be reached, from grants, concessional finance, private finance, climate portfolios and more. These targets have been deemed 'fantasy' by some, while the new targets were called a [joke](#) and [betrayal](#) last year by some developing countries. Since then, the global development finance landscape has drastically worsened alongside momentum on climate.
- The Green Climate Fund had a [record-breaking year](#) as its board channeled over USD\$3 billion to developing countries over 2025, and 10 years on from its first projects in November 2015. [Green debt sales](#) meanwhile hit USD\$947 billion by December 26, despite changing climate politics, due to strong demand for electricity, cooling, and electrification from AI and data centers.
- Moody's forecasts that global sustainable bond issuance could reach USD\$1 trillion again in 2025, driven largely by continued [demand for green finance](#) and climate-related projects, despite political headwinds and a shrinking share of the overall bond market; green bonds are expected to lead growth at USD\$620bn while social and transition segments show mixed trends.

Interesting Climate Charts

CarbonBrief – [IEA: Renewables have cut fossil-fuel imports for more than 100 countries](#)

Many countries have significantly cut their reliance on fossil-fuel imports by building renewables

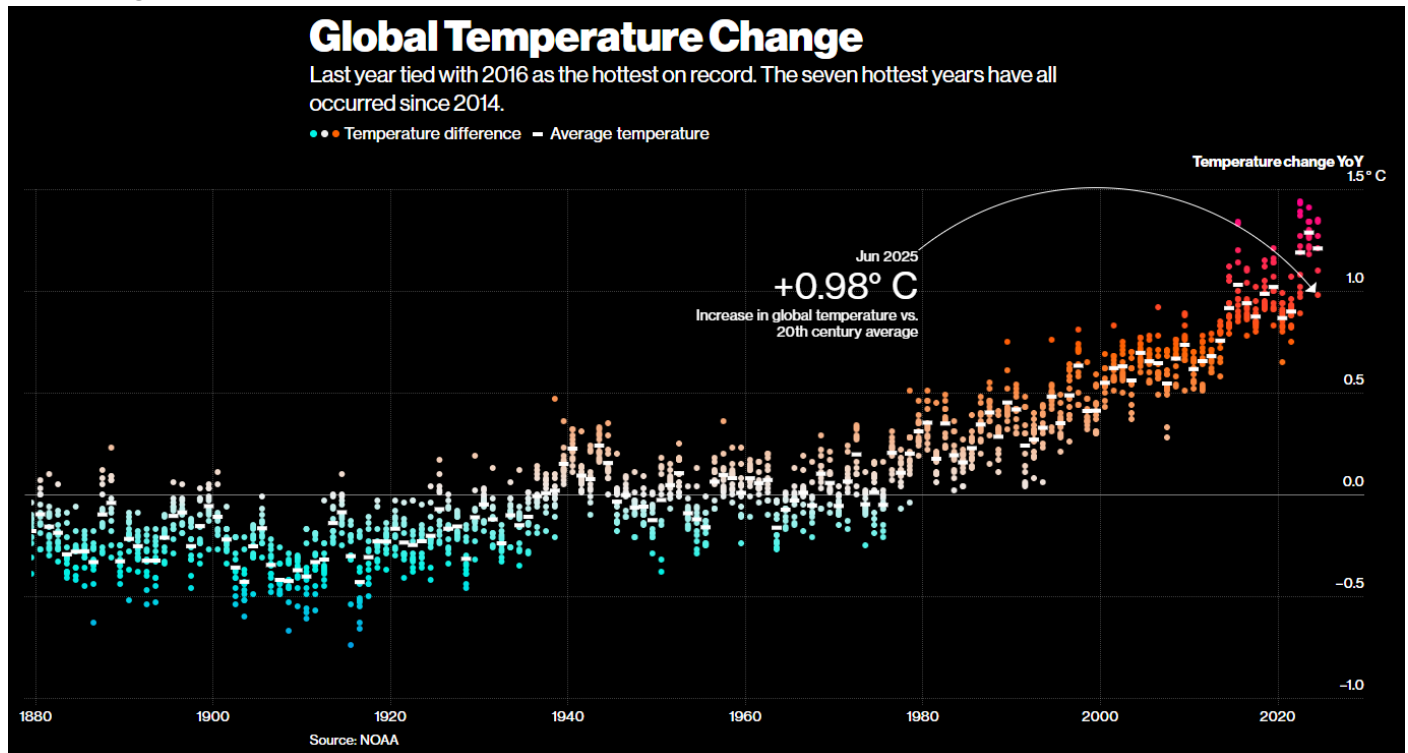
Fossil-fuel import dependence of electricity supply, actual and in IEA 'low renewables' scenario (%)



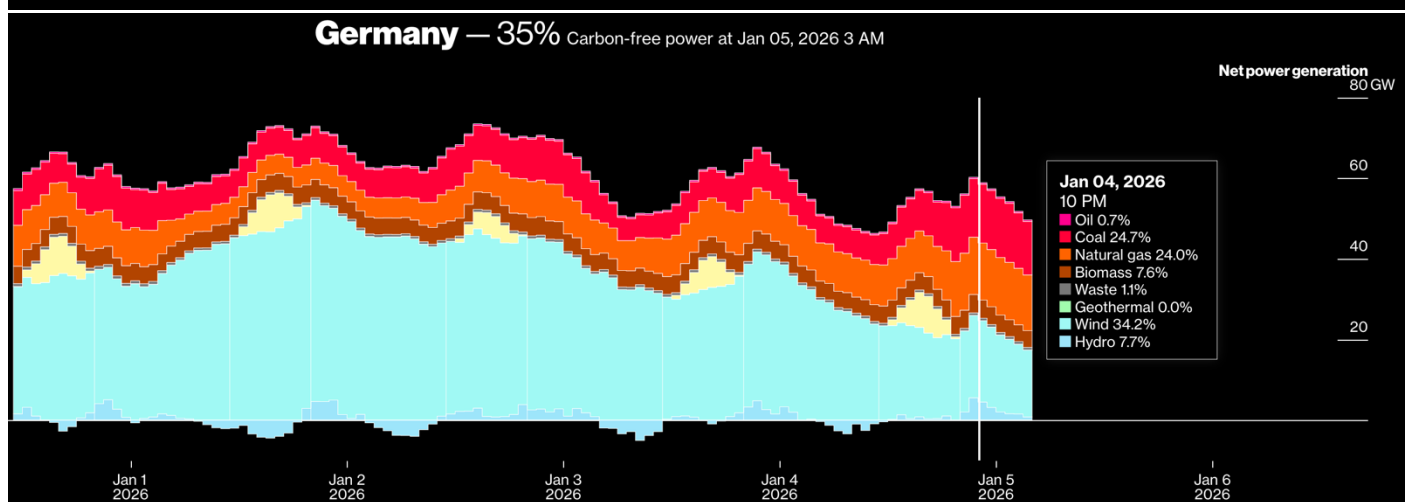
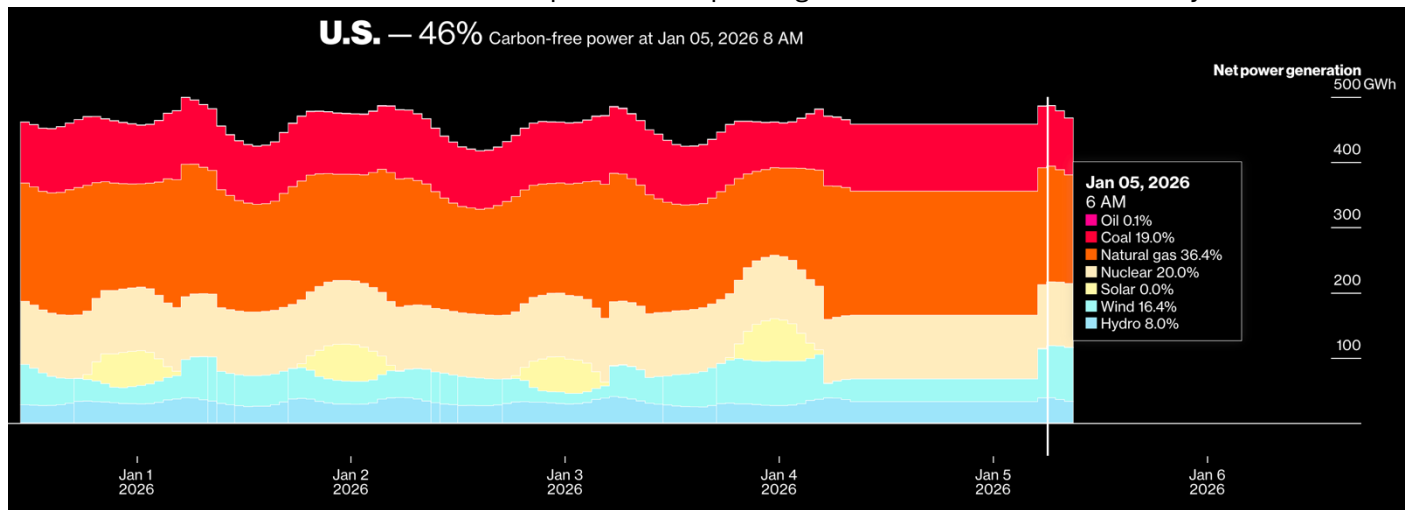
Source: IEA

CarbonBrief

Bloomberg – [Data Dash](#)



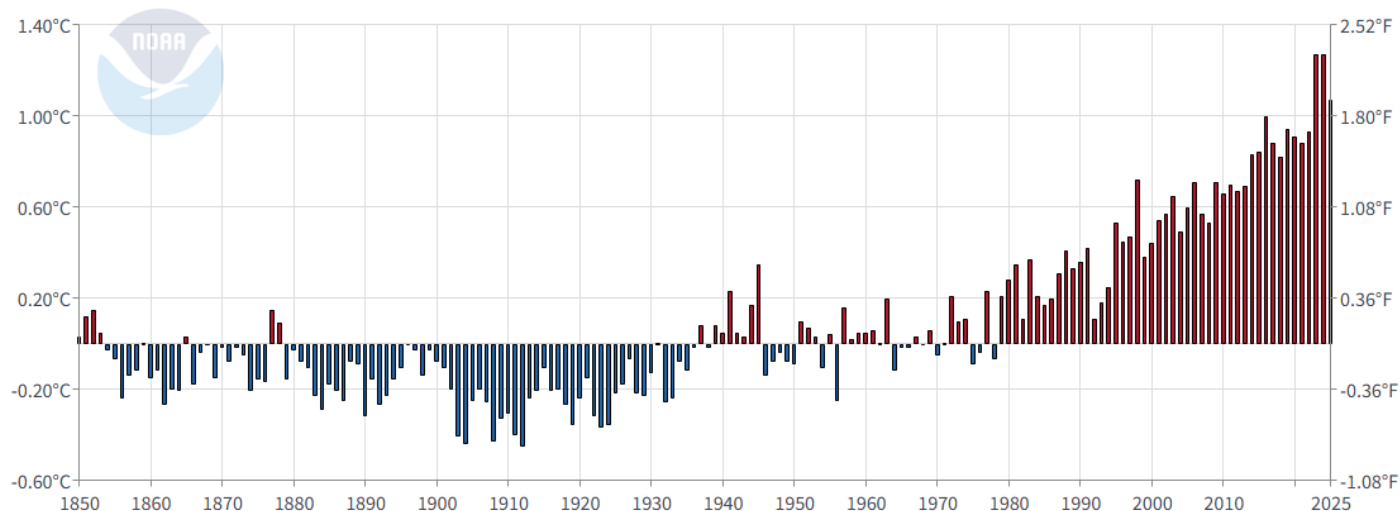
[Real-Time Power Mix](#) – Ratio of carbon-free power in net power generation for U.S. and Germany



NOAA – Global Climate Monitoring Report

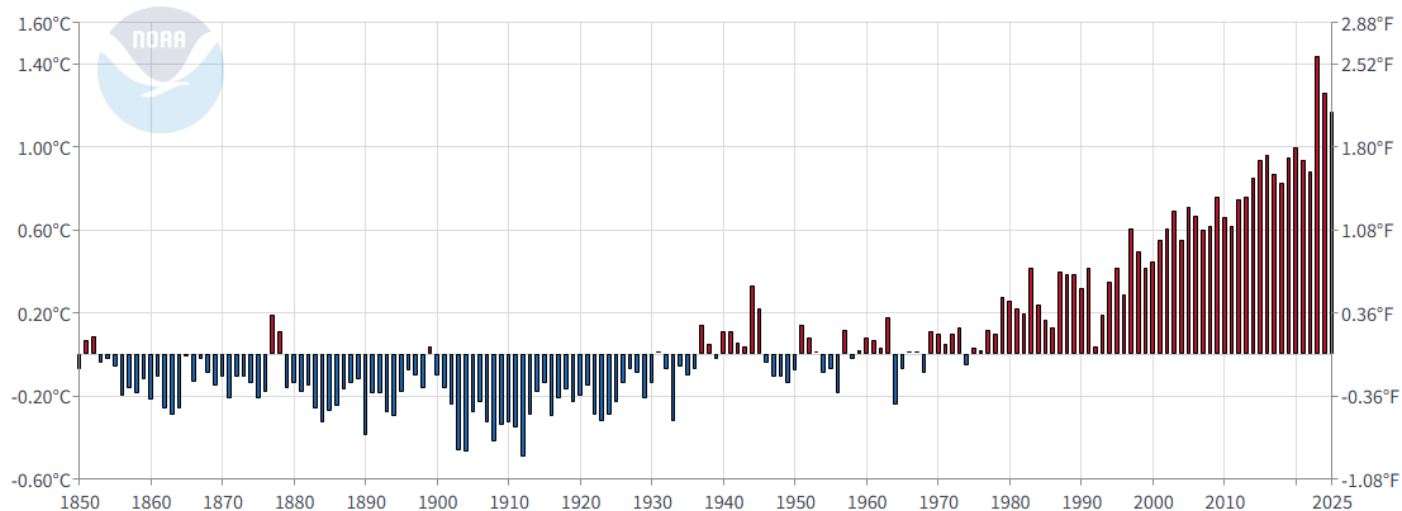
Global Land and Ocean Average Temperature Anomalies

August



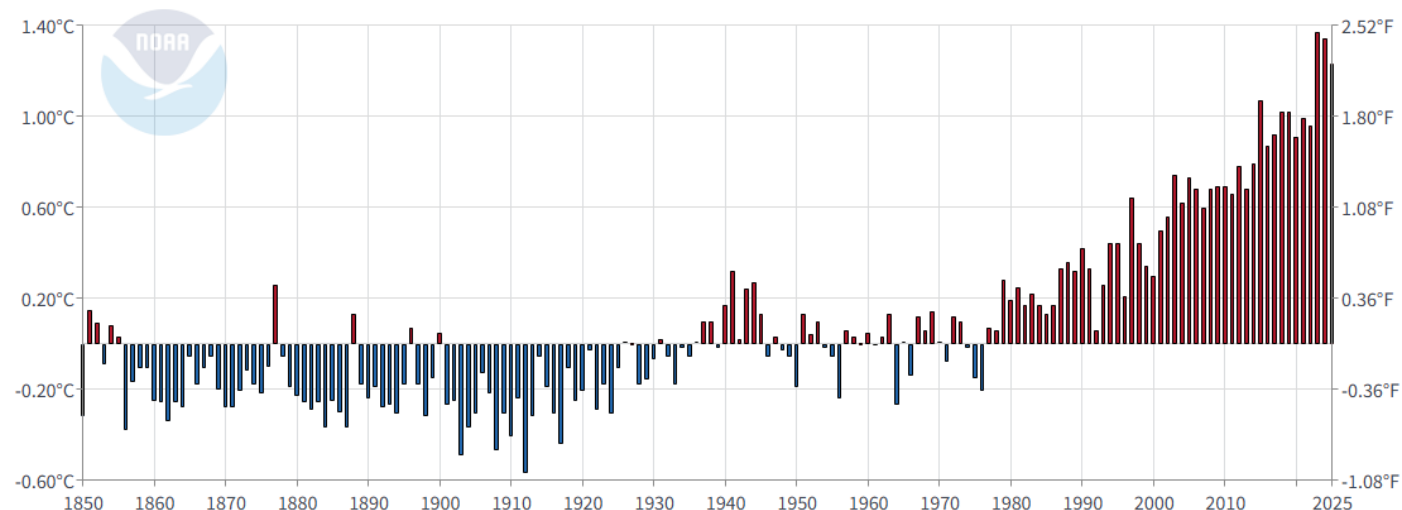
Global Land and Ocean Average Temperature Anomalies

September



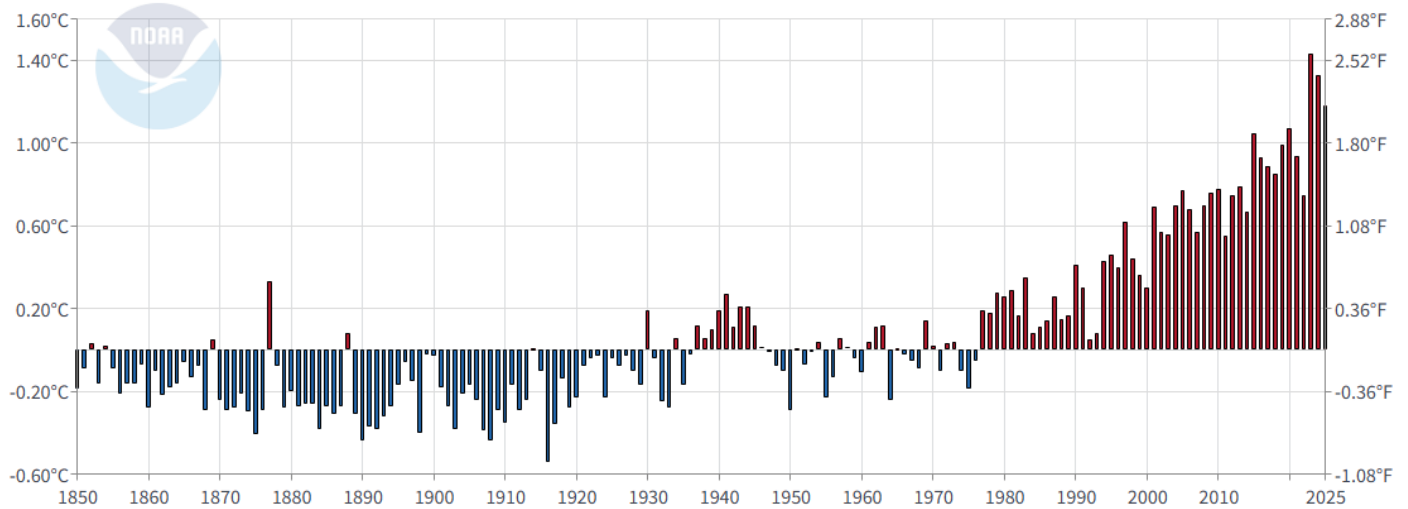
Global Land and Ocean Average Temperature Anomalies

October



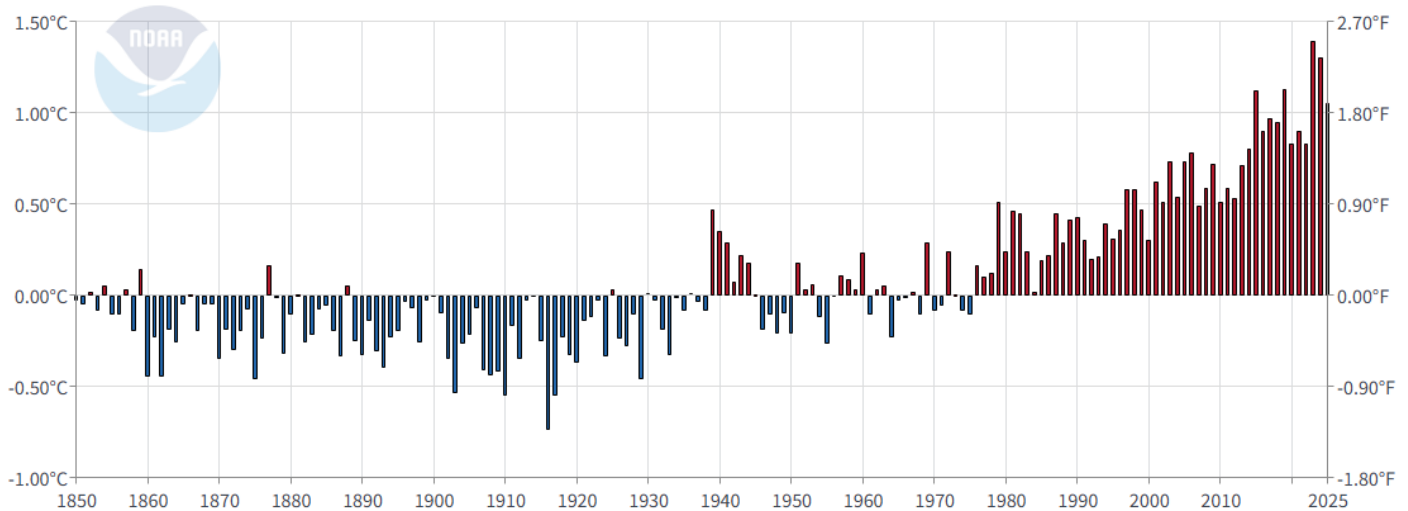
Global Land and Ocean Average Temperature Anomalies

November



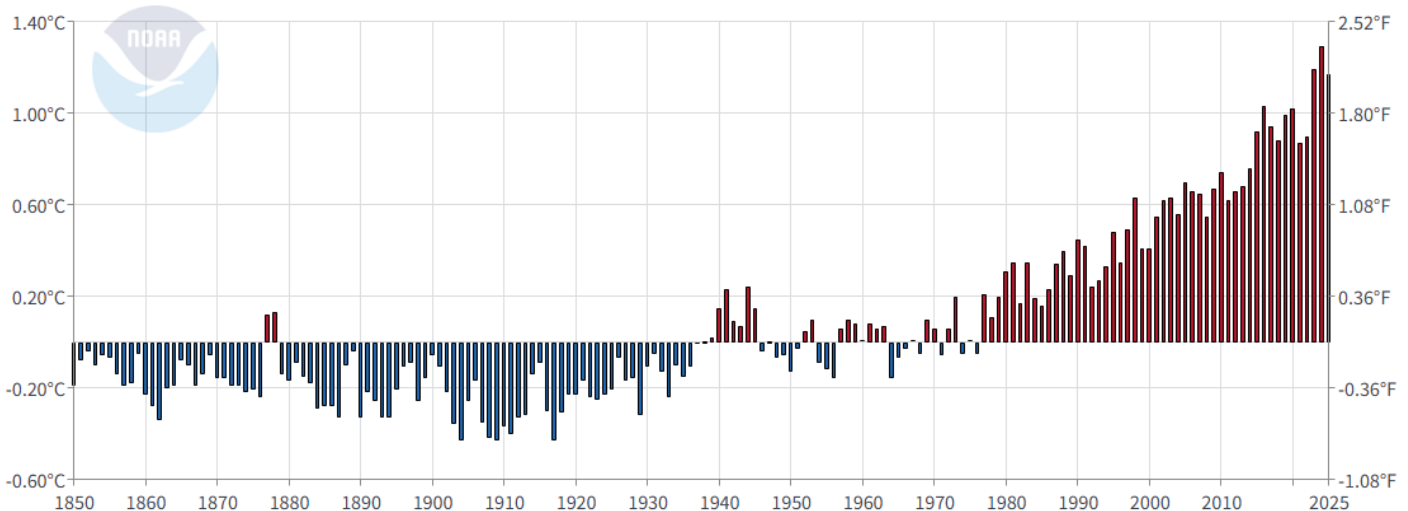
Global Land and Ocean Average Temperature Anomalies

December



Global Land and Ocean Average Temperature Anomalies

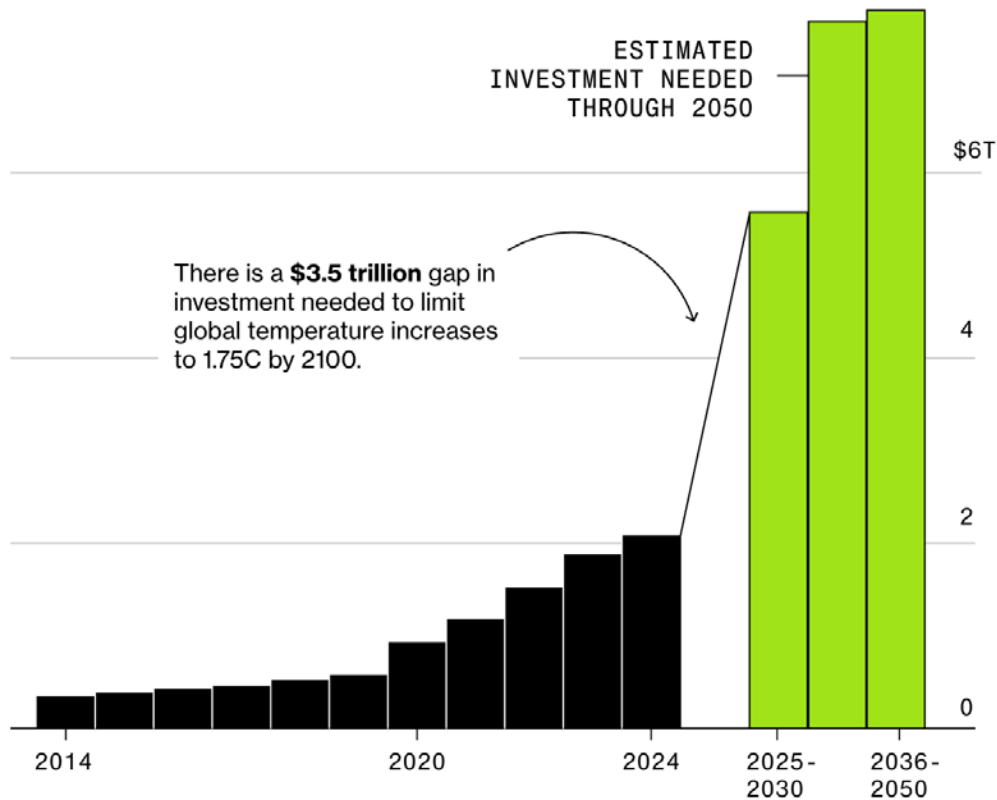
January-December



Bloomberg Green – [There's a \\$10 Trillion Antidote to Trump's Climate Backlash](#)

Energy Transition Investment Has Soared, But Not Far Enough

Global energy transition investment and projected investment needs



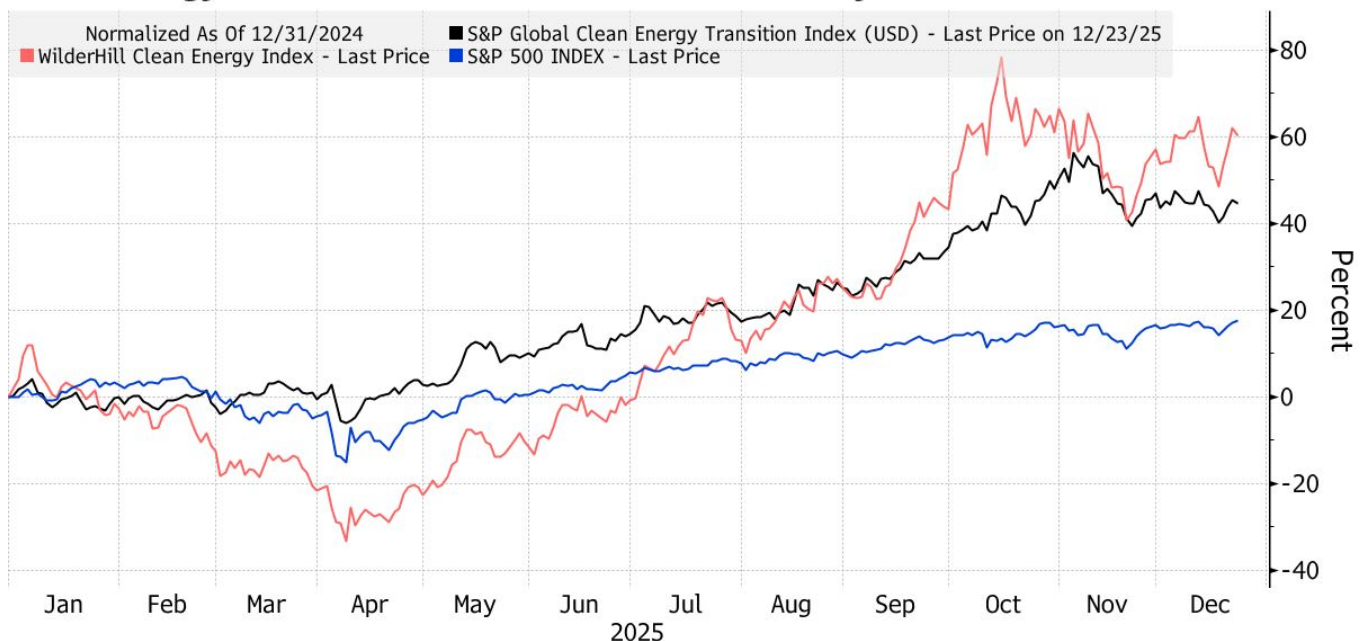
Source: BloombergNEF

Note: Projected investments are annualized. Investment since 2020 includes additional categories.

Bloomberg Green – [Green Debt Sales Hit Record Levels Despite Climate Backlash](#)

Green Stocks Outperform

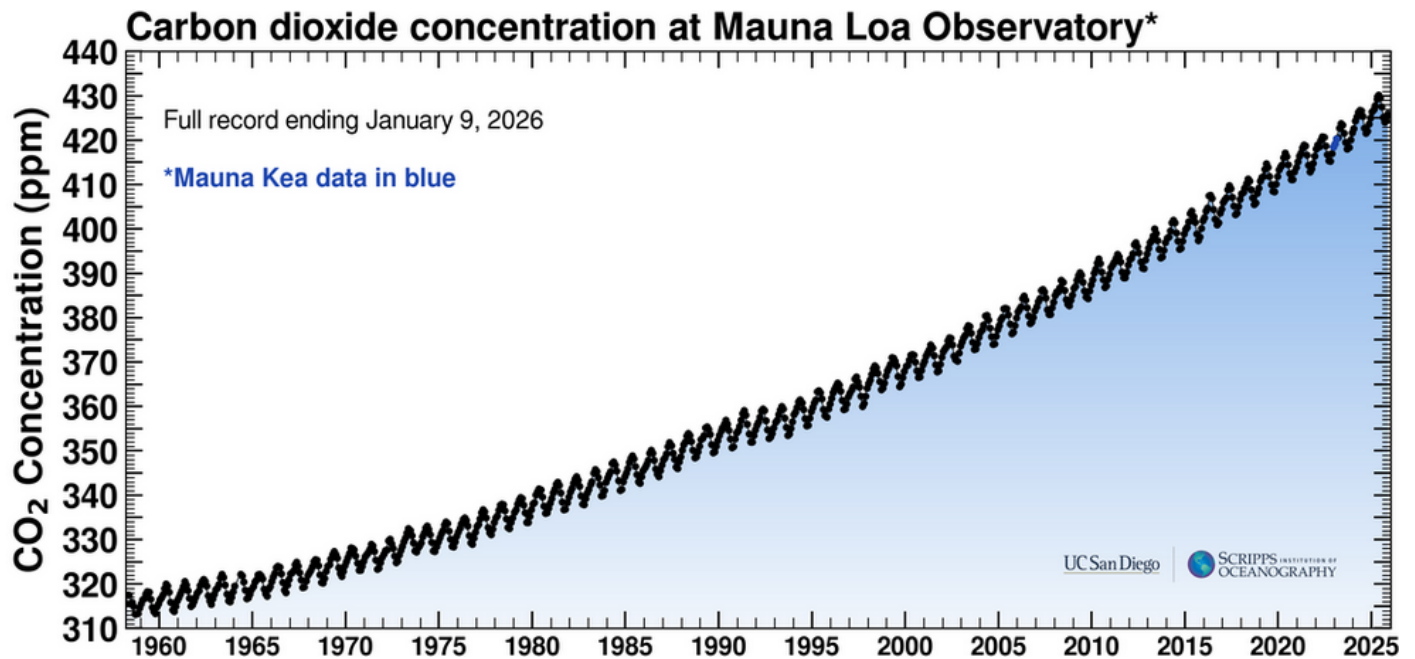
Clean-energy indexes have beaten the S&P 500 this year



Source: Bloomberg

Bloomberg 

UC San Diego, Scripps Institution of Oceanography – [The Keeling Curve](#)



Climate Central – [US Billion-Dollar Disasters 1980-2025](#)

