



Global Development and Environment Institute
Tufts University

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After COP28: The Bumpy Road to Net Zero

by Jonathan Harris*

Introduction: Climate Crisis and Global Response

The year 2023 was the hottest year in recorded history. Record high temperatures were recorded on land, in the oceans, and in Antarctica. Global concentrations of major greenhouse gases carbon dioxide, methane and nitrous oxide climbed to their highest levels ever. Huge losses of ice were recorded in Greenland and from glaciers worldwide.¹ 2023 continued and accelerated a steady trend of increasing global temperatures since the 1960s (Figure 1).

According to the National Oceanic and Atmospheric Administration, in 2023 the United States experienced “28 weather and climate disasters in 2023, surpassing the previous record of 22 in 2020, tallying a price tag of at least \$92.9 billion.”² Worldwide, extreme weather events included intensified hurricanes, unprecedented wildfires, and deadly flooding in Greece, Turkey, Bulgaria, Libya, and elsewhere.³

Climate
Policy Brief

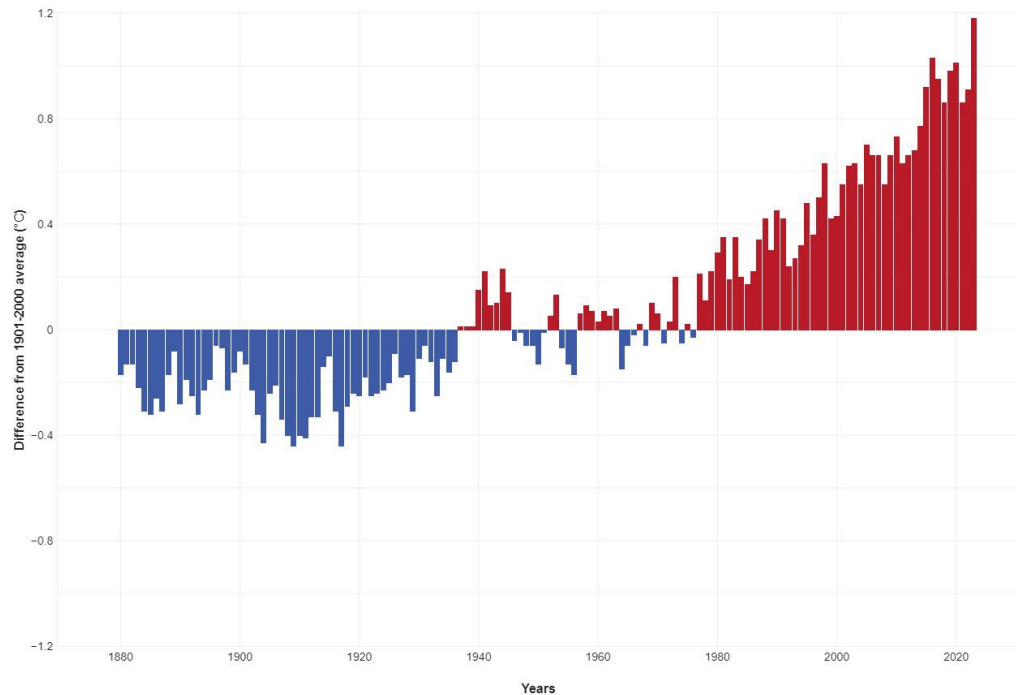
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*Jonathan Harris is a senior researcher at GDAE. Contact him at Jonathan.harris@tufts.edu

Figure 1: Global Average Surface Temperature, 1880-2023

GLOBAL AVERAGE SURFACE TEMPERATURE



Source: National Oceanic and Atmospheric Administration (NOAA), Climate Change: Global Temperature <https://www.climate.gov/news-features/understanding-climate/climate-change-global-temperature>

In this context of intensified climate crisis, the **United Nations climate conference COP28** met in Dubai, United Arab Emirates, to evaluate and strengthen global responses to climate change. The goal was to advance the objectives first set at the **Paris Conference of 2015 (COP21)**, and made more specific and ambitious at the 2021 COP26 conference in Glasgow, UK, aiming to hold global temperature increase to no more than 1.5°C above pre-industrial levels—a level that was closely approached in 2023.⁴

Was the 2023 conference a success or failure? There are a wide range of opinions, with evidence on both sides. In this policy brief, we review and summarize the outcomes of COP28 and the challenges ahead.

Outcomes of COP28

COP28 included a **Global Stock Take (GST)**. The GST represented a mid-term review of progress that UN member states were making towards the 2015 Paris Agreement (aiming at limiting temperature increases to below 2°C, with a more ambitious goal of below 1.5 °C). “The stock take recognizes the science that indicates global greenhouse gas emissions need to be cut 43% by 2030, compared to 2019 levels, to limit global warming to 1.5°C. But it notes Parties are off track when it comes to meeting their Paris Agreement goals.”⁵

According to an analysis of the GST by the World Economic Forum, “global emissions continue to rise by 1.5% a year, when they need to reduce by 7% annually to 2030 to keep the goal of 1.5°C alive. The GST was a sobering reminder that the world was far off its targets.”⁶

While the formal resolution of COP28 announced the “beginning of the end” of the fossil fuel era, this represented a statement of intentions, not of accomplishments. “While we didn’t turn the page on the fossil fuel era in Dubai, this outcome is the beginning of the end,” said UN Climate Change Executive Secretary Simon Stiell in his closing speech. “Now all governments and businesses need to turn these pledges into real-economy outcomes, without delay.”⁷

Goals set at COP28

A widely accepted principle is the need for **Net Zero Emissions** by 2050. While this may seem far-fetched in the context of still-increasing global emissions, it has become a widespread basis for climate policy for many countries, communities, and corporations. Intermediate goals that were accepted at COP28 on the road to net zero included:

- Tripling the global capacity of renewable energy and doubling the annual rate of energy efficiency improvements before 2030.
- Rapidly phasing down “unabated” coal use. The use of the term “unabated” implies the possibility of balancing emissions with carbon capture and storage—an as-yet unproven technology which

some argue simply provides an excuse for avoiding emissions reduction.

- Significantly curbing non-CO2 emissions, with a goal of a 30% cut below 2020 levels of methane emissions by 2030, including a 60% cut in methane emissions from the fossil fuel sector. Methane is a greenhouse gas that is shorter lived than carbon dioxide, but 80 times more damaging in terms of warming effects in the short run.
- “Phasing out” subsidies for fossil fuels “that do not address energy poverty or facilitate just transitions” – allowing some leeway for developing countries in particular to continue to subsidize fossil fuels.
- Transitioning away from fossil fuels to achieve net zero by 2050.⁸

What Will it Take to Achieve Net Zero?

A report on COP28 by McKinsey Sustainability reached a moderately positive conclusion: “COP28 saw momentum on climate action continuing to build. More ambition is still needed to accelerate progress —so it can be measured in months not decades.”⁹

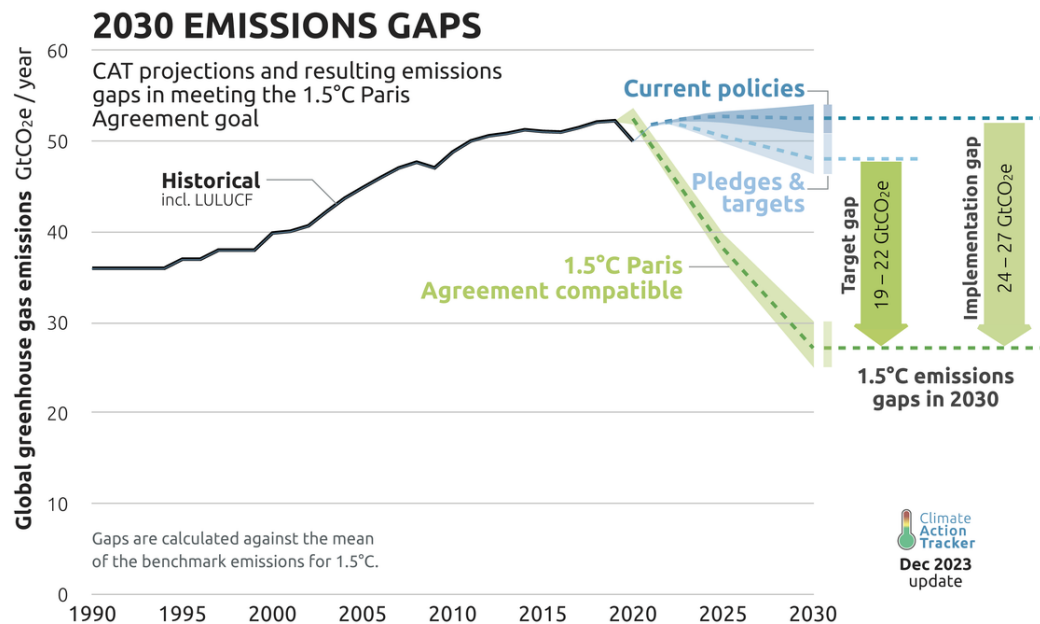
According to the International Energy Agency, implementation of the energy-related pledges made at COP28, including on renewables, efficiency and methane, would lead to a decline of about four metric gigatons (Gt) of greenhouse gas emissions by 2030, relative to earlier projections. But the IEA also finds that this is only around 30% of the emissions reduction needed to keep the world on a path to limiting warming to 1.5°C.¹⁰

Others had a more negative assessment, based on the failure of the COP28 agreement to call for a phaseout of fossil fuels. According to an editorial in Nature, “Phasing out fossil fuels is not negotiable. World leaders will fail their people and the planet unless they accept this reality.”¹¹

Despite the conference statement that countries need to “transition away” from fossil fuels, critics noted that the resolution was “riddled with loopholes and lacks clear goals and fixed timelines, representing “an incremental advancement when what we really needed is an exponential step change in our actions,” said Samoan negotiator Anne Rasmussen, on behalf of the 39-nation Alliance of Small Island States (AOSIS).”¹²

The independent Climate Action Tracker finds that, even if all COP28 pledges and targets are met, the world will be well short of a “1.5°C Paris Agreement compatible” path of emissions reduction, leaving a significant “emissions gap” (Figure 2).

Figure 2: Pledges, Targets, and Emissions Gap



Source: Climate Action Tracker, CAT Emissions Gap <https://climateactiontracker.org/global/cat-emissions-gaps/>

Agriculture, Forests, and Natural Systems

An important aspect of the net zero goal is the role of agriculture, forests, and natural systems. Food systems now account for about 30% of global emissions. The **Emirates Declaration on Sustainable Agriculture, Resilient Food Systems and Climate Action**, with the support of 134 countries (representing 70% of the world’s land) pledged to include emissions from agriculture and farming in national climate action plans, aiming for a shift to sustainably produced and low-emission agricultural systems. But specific plans to transform world agriculture from a net emitter to a net absorber of carbon—theoretically possible given the great carbon absorption capacities of soils—were lacking.¹³

Ending deforestation and preventing destruction of wetlands and other natural systems is an essential element for limiting global temperature

increase. According to the World Resources Institute, COP28 saw important but largely unheralded progress in this area. “Those on the ground in Dubai witnessed a flurry of positive and important steps on forests, ranging from enhanced commitments to ending deforestation in the tropics to new financial support for forest action in developing countries.”¹⁴

Heavily forested countries including the Democratic Republic of Congo, Ghana, the Republic of Congo, Papua New Guinea, Ghana, Costa Rica, Colombia, and Honduras announced new initiatives for forest protection. Brazil proposed the creation of a global **Tropical Forest Forever** fund to finance forest conservation, with \$250 billion annually directed toward simple, area-based payments to countries based on the area of forests they protect, as well as a \$200 million initiative to restore degraded areas in the Amazon forest by 2030.

Progress has also been made on the \$12 billion **Global Forest Finance Pledge** agreed at COP26 in 2021, with \$5.7 billion, or 47% of the total promised finance, has already been directed toward forest-related programs in developing countries.¹⁵

Financing Climate Policy

According to McKinsey Sustainability, “COP28 saw more than \$80 billion in climate finance commitments from countries, development banks, private sources, and philanthropists. This level of financing is below what is needed, but there are opportunities for this investment to spur additional financing for the transition, including through new finance channels.”¹⁶

COP28 negotiations also resulted in an agreement to implement a Loss and Damage Fund, which will direct funding toward countries most vulnerable to the effects of extreme weather events, including droughts, flooding, and rising seas. The fund raised almost \$800 million during COP28, with the most substantial contributions from the United Arab Emirates and Germany.¹⁷ But the amounts raised pale in comparison with estimates of annual damages from climate disasters in vulnerable countries, which are in the range of \$800 billion annually.¹⁸

Conclusion: The Road From Here

COP 28 represented a clear increase in global ambitions for climate policy. Now the question is whether those greater ambitions, and the even greater improvements needed for net zero, will be accomplished. In April 2024, UN Climate Change Executive Secretary Simon Stiell gave a speech entitled “Two Years to Save the World”, in which he argued that national and international action to ramp up national climate action plans and mobilize climate finance over the next two years would be crucial.¹⁹

Some developments are encouraging. Very rapid expansion of renewable energy has taken place in China, Europe, and the United States. Recent years have seen record-breaking solar output, with the International Energy Agency (IEA) projecting that “more than 440 gigawatts of renewable energy would be added in 2023, more than the entire installed power capacity of Germany and Spain together. China, Europe and the US each set solar installation records for a single year, according to the International Renewable Energy Agency (IEA).”²⁰

At the same time, global greenhouse emissions continue to increase. China, the world’s largest emitter, increased emissions by 10% between 2019 and 2023.²¹ China is heavily dependent on coal and has six times as many coal plants under construction as the rest of the world combined.²² Overall global emissions fell sharply during the 2020 pandemic, but have since bounced back, although the rate of increase has slowed. The IEA finds that “clean energy growth has limited the rise in global emissions, with 2023 registering an increase of 1.1%.” Other studies present an even lower estimate of only 0.1% for the 2023 increase.²³

A major medium-term benefit could come from reduction of methane emissions. But major policy action is needed to achieve COP28’s stated goal of near-zero methane emissions by 2030. The U.S. Environmental Protection Agency, for example, has announced a methane reduction plan including methane emissions fees and technical assistance to accelerate the transition to no- and low- emitting oil and gas technologies. These and similar plans in other countries represent a start on harvesting this “low-hanging fruit” of unnecessary methane leaks and flaring, but much more needs to be done.

Perhaps the greatest achievement leading up to and following COP28 has been to change the framework for climate action to a more ambitious one, which is reflected in many national policies. The United States Inflation Reduction Act includes unprecedented incentives for a transition to renewable energy.

State and local net zero action in the U.S., and the acceptance of net zero as a policy goal in many countries and industries, represents a major turnaround. In early 2024, California hit a new record of generating 100% of its power from renewable sources for 30 days of a 38-day period in March and April. California is ahead of many other regions, but the trend is clearly toward rapid expansion of renewables, with other states also setting ambitious goals for solar, onshore and offshore wind, and geothermal systems.

But many daunting barriers remain. Political opposition to climate policies, such as resistance by European farmers to agricultural emissions reduction plans, and broader opposition by the fossil fuel industry and other vested interests, are significant. The urgent need for rapid grid expansion to accommodate wind and solar has also engendered opposition, and grid upgrading requires major investment that may be difficult to mobilize. But at least the goal of net zero is now on the agenda, and progress will be measured at the next international conferences, COP29 in Baku, Azerbaijan in 2024, and COP30 in Brazil in 2025.

¹ “‘Simply mind-boggling’: world record temperature jump in Antarctic raises fears of catastrophe.” The Guardian https://www.theguardian.com/environment/2024/apr/06/simply-mind-boggling-world-record-temperature-jump-in-antarctic-raises-fears-of-catastrophe?CMP=oth_b-aplnews_d-1

“Global ocean heat sets record for 12 straight months, alarming scientists,” The Washington Post <https://www.washingtonpost.com/weather/2024/03/20/record-ocean-heat-climate/>

“Scientists confirm record highs for three most important heat-trapping gases,” The Guardian https://www.theguardian.com/environment/2024/apr/06/record-highs-heat-trapping-gases-climate-crisis?CMP=oth_b-aplnews_d-1

² “2023: A historic year of U.S. billion-dollar weather and climate disasters,” National Oceanic and Atmospheric Administration <https://www.climate.gov/news-features/blogs/beyond-data/2023-historic-year-us-billion-dollar-weather-and-climate-disasters>

³ “The year’s most extreme weather shows what a warming planet is capable of, and what’s to come,” CNN <https://www.cnn.com/2023/12/30/weather/extreme-weather-climate-change-2023/index.html>

⁴ “Earth was hotter than ever in 2023, approaching 1.5-degree warming limit,” PBS News Hour

<https://www.pbs.org/newshour/science/earth-was-hotter-than-ever-in-2023-approaching-1-5-degree-warming-limit>

⁵ “COP28 Agreement Signals “Beginning of the End” of the Fossil Fuel Era”. United Nations Climate Change <https://unfccc.int/news/cop28-agreement-signals-beginning-of-the-end-of-the-fossil-fuel-era>

⁶ “COP28: What did it accomplish and what’s next?” World Economic Forum <https://www.weforum.org/agenda/2023/12/cop28-what-did-it-accomplish-and-whats-next/>

⁷ “COP28 agreement signals beginning of the end of the fossil fuel era” United Nations Climate Change <https://unfccc.int/news/cop28-agreement-signals-beginning-of-the-end-of-the-fossil-fuel-era>

⁸ “COP28 resolution: The key points at a glance”, Sky News <https://news.sky.com/story/cop28-draft-resolution-the-key-points-at-a-glance-13029237>

⁹ “Outcomes from COP28: What next to accelerate climate action?” McKinsey Sustainability <https://www.mckinsey.com/capabilities/sustainability/our-insights/outcomes-from-cop28-what-next-to-accelerate-climate-action>

¹⁰ International Energy Association, “Assessment of the Evolving Pledges at COP28.” <https://www.iea.org/news/iea-assessment-of-the-evolving-pledges-at-cop28>

¹¹ “COP28: the science is clear — fossil fuels must go.” *Nature* <https://www.nature.com/articles/d41586-023-03955-x>

¹² “Was COP28 A Success or Flop? Depends Who You Ask” *Time* <https://time.com/6455646/was-cop28-a-success-or-flop/>

¹³ “Climate Conference COP27: Focus on Agriculture and Forests” Jonathan Harris, Shreepath Jain, and Anne-Marie Codur, *GDAE Climate Policy Brief* #16, November 2022. <https://sites.tufts.edu/gdae/climate-policy-briefs/>

¹⁴ “At COP28, Forests and Nature Saw Important Wins.” World Resources Institute <https://www.wri.org/insights/cop28-outcomes-forests-nature>

¹⁵ Ibid.

¹⁶ “Outcomes from COP28: What next to accelerate climate action?” McKinsey Sustainability <https://www.mckinsey.com/capabilities/sustainability/our-insights/outcomes-from-cop28-what-next-to-accelerate-climate-action>

¹⁷ “Climate policy in 2023,” *Nature Reviews Earth & Environment* [Climate policy in 2023 Nature Reviews Earth & Environment](https://www.nature.com/articles/s43017-024-00532-2)

¹⁸ “The successes and failures of COP28” Brookings. <https://www.brookings.edu/articles/the-successes-and-failures-of-cop28/>

¹⁹ “Two Years to Save the World: Simon Stiell at Chatham House.” UN Framework Convention on Climate Change <https://unfccc.int/news/two-years-to-save-the-world-simon-stiell-at-chatham-house>

²⁰ “Europe, US, China: Where installed the most wind and solar power in 2023?” Euronews <https://www.euronews.com/green/2023/12/29/europe-us-china-where-installed-the-most-wind-and-solar-power-in-2023>

²¹ “China is pumping out carbon emissions as if COVID never happened. That’s bad news for the climate crisis,” Australian National University Institute for Climate, Energy & Disaster Solutions <https://iceds.anu.edu.au/news-events/news/china-pumping-out-carbon-emissions-if-covid-never-happened-'s-bad-news-climate>

²² “China builds more new coal plants than rest of the world.” National Public Radio <https://www.npr.org/2023/03/02/1160441919/china-is-building-six-times-more-new-coal-plants-than-other-countries-report-fin>

²³ “CO2 Emissions in 2023 – Analysis”. International Energy Agency <https://www.iea.org/reports/co2-emissions-in-2023>; “Global carbon emissions in 2023,” *Nature Reviews Earth & Environment* <https://www.nature.com/articles/s43017-024-00532-2>