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News & Highlights

COP26: Some Progress, But Nations Still Fiddling While World Warms

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From 31 October to 13 November 2021, in an impassioned and frequently tense gathering, the 26th United Nations Climate Change Conference of the Parties, known as COP26, convened in Glasgow, Scotland. While participants made some progress in terms of announced commitments to reduce carbon emissions, the major area of agreement appears to be that much more is needed for the planet to avoid potentially catastrophic warming.

A principal aim of the climate summit was to secure global net-zero carbon emissions by 2050—while keeping the 1.5 °C limit on global warming within reach. Another goal was to finalize rules proposed at the landmark Paris summit of 2015 for international cooperation around carbon markets and enhanced transparency and standardization in how countries track and report their progress on emissions and climate change measures [1]. Other areas of focus included pushing richer countries to deliver on previously failed promises to mobilize at least 100 billion USD in climate change-related financing per year, and to foster climate adaptation to protect vulnerable communities and natural habitats [2].

On keeping the 1.5 °C limit within reach, the COP26 president Alok Sharma said near the end of the conference: "We can now say with credibility that we have kept 1.5 °C alive. But its pulse is weak, and it will only survive if we keep our promises and translate commitments into rapid action" [3].

This somewhat pessimistic perspective, however, may be overly optimistic [4]. In the week before COP26 commenced, the United Nations Environment Programme (UNEP) published its influential Emissions Gap Report 2021 [5], which incorporates the national greenhouse gas emissions and targets declared by member countries of the United Nations Framework Convention on Climate Change (UNFCCC). The report concluded that even if the targets in these latest Nationally Determined Contributions (NDCs) were all met, as well as other mitigation pledges and unconditional commitments, the planet is likely to experience a global temperature rise of 2.7 °C by the year 2100. According to the UNFCCC, emissions in 2030 are currently tracking to be 16% higher than in 2010 [6]. To keep warming within 1.5 °C—it is currently at 1.2 °C [7]—will now require a 55% cut in global CO_2 emissions by 2030 compared with 2010 levels, while a 2 °C limit would require a 30% cut [5].

Then, during COP26 itself, the respected Climate Action Tracker website released a study by Niklas Höhne, professor, mitigation of greenhouse gases, at Wageningen University in the Netherlands and colleagues. Their report concluded that even if emissions pledges made at COP26 itself were met, global temperatures would still rise by around 2.4 °C by 2100 (Fig. 1) [7].

Nevertheless, Joeri Rogelj, a lead author on the Emissions Gap Report and climate scientist and director of research at the Grantham Institute at Imperial College London, UK, judged COP26 to have delivered some progress. "It is definitely on the more ambitious spectrum of what could have been achieved," Rogelj said. "Today we have China, the USA, Saudi Arabia, and India having net zero targets. Just two years ago that would have been the stuff of dreams—literally unimaginable." The problem, he added, is that many countries' near-term emissions targets for 2030 are not sufficient to meet their long-term net zero targets. "We are not yet confident that these net zero targets will ever be achieved."

Whether they will be may depend on the next round of COP talks, in Sharm el-Sheikh, Egypt, in November 2022. Countries have agreed to return with strengthened commitments towards meeting goals of the Paris Agreement, to limit global warming to "well below" 2 °C, and preferably to 1.5 °C [8].

Shortly after the Glasgow meeting adjourned, US climate envoy John Kerry declared that the "starting gun" had been fired to end climate change [9]. Rob Jackson, professor of Earth systems science at Stanford University, in Stanford, CA, USA, took issue with Kerry's assessment. "The starting gun was fired 30 years ago, and we have emitted a trillion more tons of carbon dioxide since then," said Jackson, who also chairs the Global Carbon Project, a Canberra, Australia-headquartered organization that works with the international science community to establish a consensus knowledge base for greenhouse gas emissions to support policy and action on climate change. "The biggest success of COP26 in my view was the Global Methane Pledge, signed by more than 100 nations," said Jackson. "It was the first time that world leaders focused on methane."

Methane is responsible for about one-third of the warming caused by greenhouses gases, second only to CO_2 [5]. The countries pledged to commit to the goal of reducing global methane emissions from 2020 levels by at least 30% by 2030, and to improve methodologies to quantify methane emissions [10]. "Of course, this pledge will only succeed if pledges turn to action quickly," Jackson said.

Philippe Ciais, head of the Atmospheric Composition Department at France's Laboratory of Climate and Environmental Sciences in Saint-Aubin, who tracks emissions through satellite data, agreed with Jackson: "The methane pledge is significant because oil companies are major emitters; if they are put under pressure, they have the technology, the access, and the money to reduce methane emissions in their operations."

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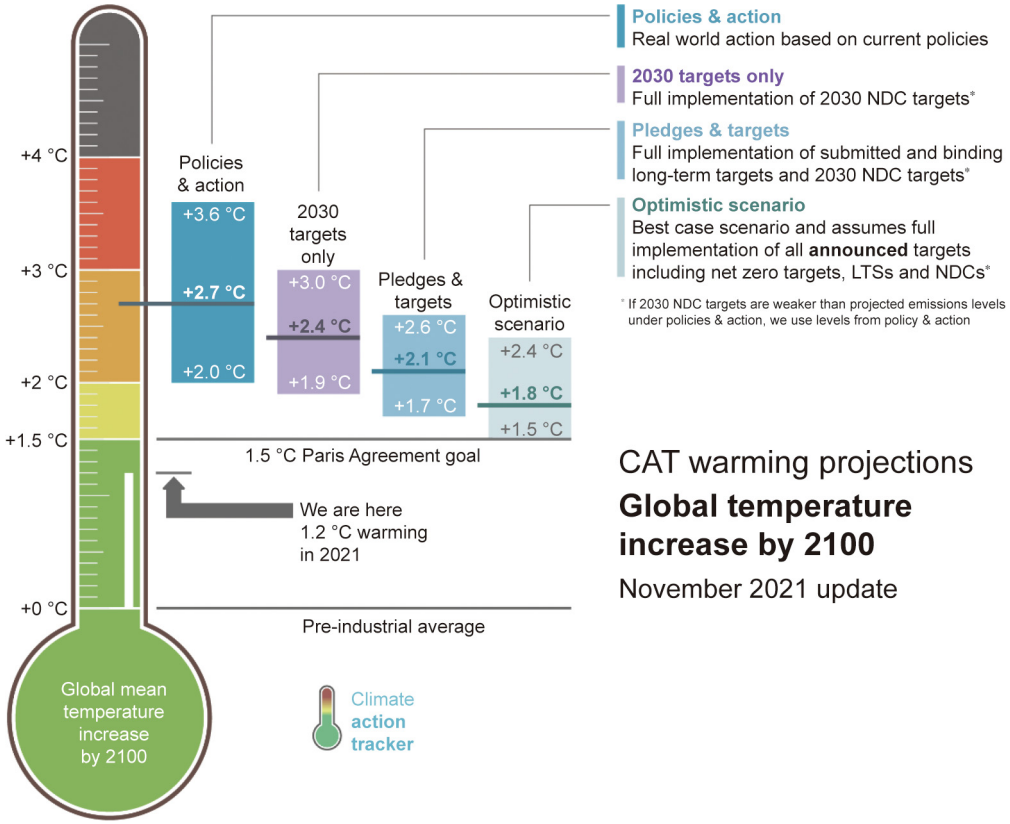

Fig. 1. With climate policy implementation advancing slowly, the Climate Action Tracker (CAT) website estimates global warming will increase to 2.7 °C by 2100, or 2.4 °C if current national emissions targets for 2030 are met, suggesting that current actions are inadequate to meet the Paris Agreement goal of keeping warming to a 1.5 °C rise. LTSs: long-term strategies. Credit: The Climate Action Tracker, with permission.

COP26 convenors also hoped to deliver a terminal prognosis for coal-fired energy generation—the single biggest contributor to anthropogenic climate change [11]. An early version of the COP26 draft proposal called on countries to "accelerate the phasing out of coal and subsidies for fossil fuel" [12]. However, after tense final negotiations that overran by 24 h, with India and China reportedly particularly insistent [13], the final wording in the Glasgow Climate Pact [14] had been watered down to "accelerate efforts towards the phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies." Unabated refers to burning coal without using carbon capture and storage processes to reduce greenhouse emissions.

Nevertheless, there is room for cautious optimism. In a world that—according to the International Monetary Fund [15]—saw $5.9 trillion USD in fossil fuel subsidies in 2020, it is the first time that a fossil fuel has been explicitly targeted in the history of the COP summits.

According to a UK Government report, 65 countries have now committed to phase out coal, and "all major coal financing countries have committed to end international coal finance by the end of 2021" [16]. COP26 saw at least 23 new national commitments to consign coal to history, with significant consumers Republic of Korea, Indonesia, and Poland among them [17]. The top coal-burning countries, including China, India, and the United States, did not commit, however.

While the outlook on global emissions is worrisome on its face, the true situation is likely worse than even this, in terms of actual emissions. One of the key problems in tracking global greenhouse gas emissions is that countries self-report their figures, so their climate pledges may be built on flawed, underreported, or absent data. An extensive investigation by the *Washington Post*, published during COP26 [18], examined the NDCs of 196 countries and reported a "giant gap between what nations declare their emissions to be versus the greenhouse gases they are sending into the atmosphere." Comparing the data reported by countries in 2019 with independent global emissions measurements, the investigation concluded that actual global emissions could be, at worst, as much as 30% higher than is being reported at the national level.

One challenge here, said Ciais, is that satellite technology is not yet up to the task of providing comprehensive atmospheric measurements of greenhouse gas concentrations. "We have almost nothing for monitoring nitrous oxide, a greenhouse gas 300 times more powerful than CO_2," he said. "For fossil-derived CO_2, the satellites we need are probably three or four years away." For methane, at least, regional measurements and the monitoring of fossil fuel industry sites are now possible using the Tropospheric Monitoring Instrument (TROPOMI) on the Copernicus Sentinel-5 Precursor satellite, launched in 2017 (Fig. 2) [19]. "A lot of gas and oil extracting countries, such as the Gulf states, are clearly underreporting their methane emissions," Ciais said [20].

For Rogelj, inaccuracies in reporting, while important, are "a second-order issue" compared with building international momentum for reducing emissions. Nevertheless, he said he hopes for a future in which "bottom-up," self-reported NDCs are ultimately combined with "top-down" scientific measurements as they become increasingly available.

Another key development of COP26 was the finalizing, after six years, of the so-called Paris Rulebook. This meant reaching agreement on the common reporting of emissions, called the Enhanced Transparency Framework [21], the aligning of national timeframes for emissions reductions, and the mechanism and standards for international carbon markets.

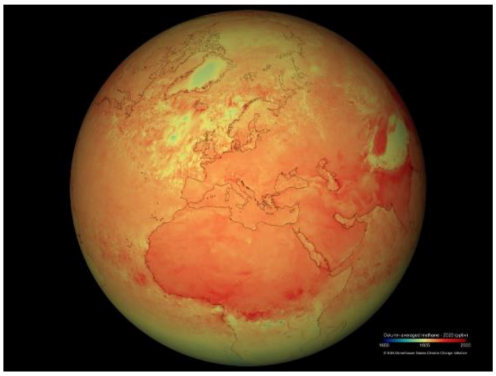

Fig. 2. This image shows the air-column-averaged methane concentration (in parts per billion by volume) in 2020, centered on Europe, using data derived from the TROPOMI on the Copernicus Sentinel-5P satellite. Credit: ESA Climate Change Initiative, with permission.

COP26 laid down the framework for national carbon markets to connect in ways that would prevent the double counting of emissions savings. In other words, for carbon credits purchased internationally, the country of origin and the purchasing country cannot both claim these credits in their NDCs [22]. The Glasgow agreement also mandated the levy of a five per cent tax on the issuing of credits to be channelled into the Adaptation Fund, created in 2001 through the Kyoto Protocol to finance adaptation projects in developing countries that are particularly vulnerable the impacts of climate change. A functioning global market for carbon emissions could potentially provide trillions of dollars in green investments through carbon offsetting [23].

While COP26 has delivered potential advances, as usual with climate change, it is the action that follows the negotiations that is all-important, said Ciais, and never more so than now: "Every decade, we scientists say the world has one more decade to make the big changes required to curb climate change. But I think this really is the last one. Soon, even 2 °C will be on life-support."

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