

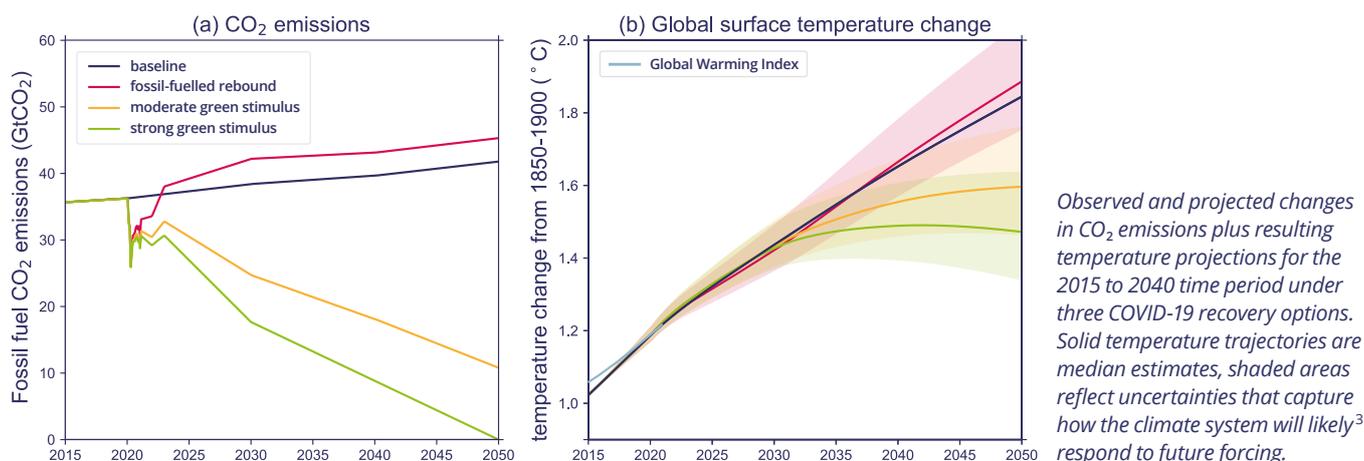
PRE-COP26 BRIEFING NOTE

HOW LIKELY ARE WE TO REACH 1.5°C IN THE NEAR FUTURE?

The Paris Agreement aims to limit global warming to 1.5°C above pre-industrial levels in order to significantly reduce the risks and impacts of climate change.

By the end of 2020, human-induced global warming had already reached about 1.2°C¹, leaving only around 0.3°C if we are to meet the Paris Agreement’s ambition. Given this small window, the question of if and when we will reach the 1.5°C threshold is receiving increased attention.

Here, we take a closer look at warming trajectories for the next 10-15 years resulting from three plausible COVID-19 recovery options² and their associated CO₂ emissions pathways.



Although the economic downturn related to COVID-19 will not help the climate in the long run², 2020 did see a record drop in global CO₂ emissions - a distinct diversion from the pathways used in climate science, and the current climate modelling framework (CMIP6), to project future temperature change.

Given the investment sums involved in COVID-19 economic recovery packages⁴, the pathways that societies take out of the pandemic will also be important in determining future warming trajectories.

Below, we assess near-term warming for three different economic recoveries from the COVID-19 economic downturn. The emissions pathways associated with the strong green recovery are fully consistent with those meeting the Paris Agreement ambition to limit warming to 1.5°C⁵.

¹ <https://www.globalwarmingindex.org>

² Forster et al. 2020, <https://doi.org/10.1038/s41558-020-0883-0>

³ likely range approximated by the trend of one standard deviation from the average response since 2015

⁴ Andrijevic et al. 2020 <https://doi.org/10.1126/science.abc9697>

⁵ SSP1-19 scenario as presented in Meinshausen et al. 2020 <https://gmd.copernicus.org/articles/13/3571/2020>

For each pathway, we calculate estimates of average future human-made warming from 2021 to 2030 and 2035 respectively, as well as the likelihood of reaching 1.5°C in each of those years, taking into account uncertainties in how the climate system will respond to future forcing (see table below).

	Estimated average human-made warming		Likelihood of reaching 1.5°C in	
	2021-2030	2021-2035	2030	2035
Pandemic Recovery				
<i>Strong green stimulus</i>	0.22°C	0.26°C	22%	40%
<i>Moderate green stimulus</i>	0.23°C	0.30°C	23%	59%
<i>Fossil fuelled</i>	0.22°C	0.35°C	22%	79%

The results show that we are unlikely (in IPCC terminology⁶) to pass 1.5°C of global warming before 2030 under any of the three recovery options. A fossil fuelled recovery would however result in an almost 80% likelihood of reaching 1.5°C by 2035, whereas a strong green stimulus would halve that likelihood, and help to set the world on track to limit warming to 1.5°C.

The takeaway message is that the rapid emissions reductions associated with a strong green recovery can not only put us on track to meet the Paris Agreement’s ambitions, but also slow down warming in the very near future, giving us more time and space to adapt to climate impacts.

The estimates presented here refer to human-induced warming, as does the Paris Agreement Long-Term Temperature Goal. Observed annual temperatures will be affected by natural variability (such as the El Niño Southern Oscillation) as well as human influence, so individual years may exceed the 1.5°C threshold earlier.

Please see the CONSTRIN 2020 Zero In Report⁷ for more detail.

THE CONSTRIN PROJECT

The EU-funded CONSTRIN project is a consortium of 14 European partners tasked with developing a better understanding of global and regional climate projections for the next 20-50 years. CONSTRIN launches its ZERO IN reports each year at the UNFCCC Conference of the Parties (COP), providing a platform to discuss new developments in climate science.

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⁶ The IPCC Uncertainty Guidance Note defines “unlikely” as having a 0-33% probability of occurring https://www.ipcc.ch/site/assets/uploads/2017/08/AR5_Uncertainty_Guidance_Note.pdf

⁷ <https://constrain-eu.org/publications/type/reports>