



ClimateActionTracker

Comparison between CAT and UNEP temperature estimates

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The two temperature estimates of the CAT and UNEP resulting from the new net zero targets are aligned when considering the methodological differences. They only seem different at first sight.

What the studies do:

The [Climate Action Tracker](#) provides a temperature estimate based on bottom-up, detailed and up-to-date policy and emission information of 36 countries scaled to the global level.

The UNEP Emissions Gap Report compares and synthesises studies using very different methodologies to derive global GHG emissions and estimate resulting temperature outcomes. CAT is one of the studies used in the UNEP emissions gap report set to derive emissions included.

How the results compare:

The first difference is that the studies use different ways to express the uncertainty of the temperature estimate due to the climate system. CAT uses the “best guess” (median) estimate, i.e. temperature level at which there is a 50% chance that it is above and a 50% that it is below that level. UNEP uses a “likely below” estimate, i.e. there is a “likely” chance (66%) that the temperature is below this level. Both estimates can be translated in the same metric, see table below. Differences between estimates should be compared at the same probability level.

The second difference is that CAT’s emissions under current policy projections for 2030 are the lowest in the set of studies assessed in the UNEP report. CAT includes the latest developments, which are usually trends that decrease emissions including the fast pick up of renewables and the dip due to the COVID-19 pandemic. Not all studies used in the UNEP report include these latest developments. With lower emissions in 2030, CAT estimates a ~0.35°C lower temperature increase by 2100 (‘likely below’ estimates). This also has an effect on the estimate of pledges and targets, because several large countries overachieve their pledges (China, India), and in such cases the overachieving policies are assumed also in the “pledge” scenario in CAT results.

Third, UNEP includes only selected large countries and only the effect on CO₂ emissions for the impact of net zero targets. CAT uses all 127 countries with net zero targets and also includes the effect on non-CO₂ emissions.

Finally, due to the uncertainty of the climate system, both studies provide large uncertainty bands which are wider than the difference between the estimates of the individual studies.

	50% chance to be below...		66% chance to be below...		Difference
	CAT	UNEP	CAT	UNEP	
Current policies	2.9°C	NA	3.14°C	3.5°C	CATs projections of 2030 emissions are lower than all other studies used in UNEP. CAT includes the latest developments and downward trends, not all UNEP studies include those.
Pledges	2.6°C	NA	2.81°C	3.2°C	CAT includes agreed and submitted long-term targets, e.g. for the EU. UNEP uses information on pledges until 2030 only.
Pledges plus net zero targets	2.1°C	NA	2.3°C	2.5-2.6°C	UNEP includes only the effect of CO ₂ of the largest emitters and only the lower temperature estimate includes the USA. CAT considers all 127 net zero targets, their year of achievement, and the effect on non-CO ₂ emissions.