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Implications of current net zero targets for long-term emissions pathways and warming levels

Andreas Geiges¹, Claire Fyson¹, Frederic Hans², Louise Jeffery², Silke Mooldijk², Matthew Gidden¹, Deborah Ramapope¹, Bill Hare¹, Claire Stockwell¹, Sofia Gonzales², and Leonardo Nascimento²

¹Climate Analytics gGmbH, Policy, Germany (andreas.geiges@climateanalytics.org)

²New Climate Institute, Policy, Germany (f.hans@newclimate.org)

In 2020, climate target announcements were dominated by net-zero commitments, including by a number of major emitters. Despite the urgency of more ambitious NDCs in the short term, long-term net-zero targets are important for the transition to global zero emissions. Tracking progress towards and assessing the adequacy of these targets requires an assessment of what they mean for transition pathways and associated emissions trajectories at both national and global levels.

We present an assessment of net-zero targets of the major emitting countries and their implications for long-term emissions trajectories and warming levels. Based on the work of the Climate Action Tracker, country-specific analyses are aggregated to a global emissions pathway to derive a best estimate for a resulting global warming in 2100. Undertaking this analysis requires assumptions to be made regarding projected emissions and removals from the land-use sector, non-CO₂ emissions, and the trajectory of total net emissions after net-zero, which we explain and explore. For example, by computing the cumulative emissions of our aggregated net-zero target emissions pathway, we can compare this pathway with modelled global emissions pathways from the IPCC's SR1.5 Special Report, to draw broad conclusions over what current net-zero commitments might mean for carbon dioxide removal and non-CO₂ emissions, and the uncertainties therein.