Technical document – Approach and methods for and notes on estimating emission levels and developing scenario comparisons and warming projections resulting from the implementation of nationally determined contributions

Addendum to the 2026 synthesis report on nationally determined contributions under the Paris Agreement

Abbreviations and acronyms

AR	Assessment Report of the Intergovernmental Panel on Climate Change
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
GHG	greenhouse gas
GWP	global warming potential
IEA	International Energy Agency
IMO	International Maritime Organization
INDC	intended nationally determined contribution
IPCC	Intergovernmental Panel on Climate Change
LT-LEDS	long-term low-emission development strategy(ies)
LULUCF	land use, land-use change and forestry
NDC	nationally determined contribution
SSP	Shared Socioeconomic Pathway

I. Approach and methods for estimating emission levels and warming projections

A. Data sources and coverage

1. The 2026 synthesis report on NDCs under the Paris Agreement covers the information communicated by Parties in their latest NDCs, including new NDCs, and in their LT-LEDS, as at 31 August 2026.[1] That information is complemented, as necessary, by data in previous INDCs and NDCs, and Parties' latest GHG inventories, national communications, biennial update reports and biennial transparency reports. Remaining gaps are filled with scientific global data sets, principally the country-reported variant of the PRIMAP-hist national historical emission time series (version 2.8). Historical emissions are used up to 2024, the last year for which many Parties reported inventory data. Previous INDCs and NDCs are reassessed with the same data and methods so that changes over time (as reflected in the warming estimates related to various historical cut-off dates) reflect changes in submissions rather than changes in data.

2. Two groups of Parties are analysed: the 154 Parties that communicated a new NDC – that is, an NDC recorded after 1 January 2024 – and, of those Parties, the 138 whose new NDC contains a 2035 target.

B. Quantification of NDC targets

3. It is assumed that Parties will achieve the conditional and unconditional emission levels implied by their NDCs; no assumptions are made on the likelihood or implications of NDCs not being fully implemented or of overachievements. Where a Party states an expected absolute emission level for a target year, that level is used. Otherwise, quantification depends on the target type: reductions relative to a base year are subtracted from the base-year emissions covered by the NDC; reductions below a 'business as usual' or other reference level are subtracted from the stated reference level emissions; cumulative targets are converted to target-year levels assuming linear achievement; intensity targets are combined with the gross domestic product projections from national statistics and projections or from the International Monetary Fund World Economic Outlook database; and net zero, carbon neutrality and climate neutrality targets are quantified with assumptions on gas and sector coverage, with non-CO_2 emissions under carbon neutrality targets projected using reference scenario growth rates. Effects of policies and measures are not quantified unless the resulting emission levels are provided in the NDCs.

4. Emissions are aggregated on a gas-by-gas basis using GWP values over a 100-year time horizon from the AR6, with conversions applied where Parties used values from the SAR, AR4 or AR5. The analysis is limited to the emissions covered by each NDC; emissions not covered are projected with the reference growth rates described in paragraph 8 below. It is assumed that any use of international market-based mechanisms leads to additional emission reductions elsewhere, without double counting.

C. Conditionality, ambition and the capped case

5. Each Party's NDC is quantified under four cases: the lower- and higher-emission ends of any stated target range, each for the implementation of unconditional elements only, and for full implementation, including the conditional elements. For Parties with conditional targets only, emissions under the unconditional case are assumed to be in line with any stated 'no additional action' reference scenario or extrapolated from a previous target using reference scenario growth rates. Group and global totals are summed within each case before any statistic is calculated; unless otherwise stated, a reported value is the mean of the four cases and its range is their minimum to maximum, not a percentile range.

[1] Three NDCs received shortly after the cut-off date for this report's analysis are included in this version of the NDC synthesis report to reflect as many recently submitted NDCs as possible.

6. Where a Party's NDC implies emissions above an illustrative reference 'current policy' projection, the headline estimates nevertheless use the NDC level stated. A variant caps each Party's NDC level at an illustrative 'current policy' reference projection (see para. 8 below); this is shown in table A.1 in the rows labelled "Global, under NDC + LT-LEDS, capped by current policy". Warming projections span every case, both capped and uncapped (see para. 13 below).

D. LT-LEDS and extrapolation beyond target years

7. Long-term visions, strategies and targets are quantified as stated in NDCs or in LT-LEDS communicated to the secretariat. Targets for beyond 2050 are assumed to be achieved proportionally by 2050, interpolating linearly from the latest target year. Between the most recent historical year and the first target year, covered non-LULUCF emissions are interpolated linearly and combined with the land sector and uncovered emission reference pathways.

8. Beyond its last target year and the most recent NDC submission, a Party's emissions follow a reference 'current policy' scenario using the country or regionally disaggregated growth rates of non-LULUCF emissions under the illustrative GCAM 8s Medium scenario of the CMIP7 ScenarioMIP[2] (snapshot of 8 September 2026). For temperature projections, a continuation of constant emissions (rates) beyond the last target year is assessed alongside the reference scenario continuation to represent extrapolation uncertainties (see para. 13 below). LULUCF emissions follow Party-reported LULUCF projections or are held constant at the most recent historical level.

E. Countries that are not Parties to the Paris Agreement

9. Some Parties to the Convention were not Parties to the Paris Agreement as at 31 August 2026. For those Parties, either their INDCs are used or the same reference 'current policy' emission extrapolation is assumed. In addition, for countries with subnational states, a sensitivity low-emission case that represents current policy and subnational state targets is taken into account to represent uncertainties in future emission trends.[3] These Parties' emissions are part of the estimated total global emissions and the global warming projections.

F. Global aggregation

10. Global totals are the harmonized world emission time series that are consistent with the historical emission estimates of the AR6 scenario database. Party-level emissions from the latest reported data are complemented by global data sets, and emissions of countries that are not Parties to the Paris Agreement are represented as described in paragraph 9 above. CO_2 emissions from international aviation (IEA statistics; carbon-neutral growth assumed with 85 per cent of 2019 emissions (high-emission end) to zero net emissions by 2050 (low-emission end)) and GHG emissions from international maritime transport (Fourth IMO GHG Study,[4] extended with IEA growth rates; linear achievement of the 2023 IMO Strategy on Reduction of GHG Emissions from Ships[5] assumed) are added to obtain global totals comparable with the IPCC-assessed scenarios. The global non-LULUCF and LULUCF totals are harmonized

[2] The Global Change Analysis Model (GCAM) scenarios are included under the Coupled Model Intercomparison Project Phase-7 (CMIP7) ScenarioMIP project, available at https://scenariomip.apps.ece.iiasa.ac.at/

[3] See Ordonez-Olazabal, K., A. Zhao, R. Cui, N. Hultman (2026). "U.S. Emissions Pathways through 2050 with State-Level Targets."Center for Global Sustainability, University of Maryland, available at: https://cgs.umd.edu/research-impact/publications/us-emissions-pathways-through-2050-state-level-targets.

[4] IMO. 2021. Fourth IMO GHG Study 2020: Full Report. London: IMO. Available at https://www.imo.org/en/OurWork/Environment/Pages/Fourth-IMO-Greenhouse-Gas-Study-2020.aspx.

[5] IMO resolution MEPC.377(80), 2023 IMO Strategy on Reduction of GHG Emissions from Ships, adopted on 7 July 2023. Available at https://www.imo.org/en/ourwork/environment/pages/2023-imo-strategy-on-reduction-of-ghg-emissions-from-ships.aspx.

separately in 2015 to the historical emissions of the AR6 scenario database: the non-LULUCF totals by a ratio that converges to one by 2080, and the LULUCF totals, after the adjustment described in paragraph 12 below, by an offset that converges to zero by 2150. For the climate model only, the emissions of individual gases, and the other emissions the model requires, are then infilled, that is, estimated from relationships between emissions in the AR6 scenario database, following the approach used for the Working Group III AR6 scenario database.

11. For the global 2035 range, the emissions of Parties without a 2035 target follow a linear transition from their last target towards the level implied by their long-term visions, strategies and targets where they communicated one, and otherwise the reference 'current policy' growth rates described in paragraph 8 above. Neither case is a projection for any individual Party.

G. Adjustment for deriving anthropogenic-only LULUCF emissions

12. There is a difference in the definitions used for the estimation of GHG emissions and removals from the LULUCF sector under the UNFCCC, on the one hand, and the estimation of anthropogenic emissions related to land-use change as part of the global emission estimates of the IPCC (see chap. 5, figure 5.5, of the contribution of Working Group I to the AR6[6]), on the other. To enable a comparison between estimated total emission levels based on the information provided by Parties and estimates from the IPCC scenario databases, such as the scenarios assessed by Working Group III for the AR6, an adjustment has to be made to account for some of the land sinks that are induced by a higher atmospheric CO_2 concentration (CO_2 fertilization). CO_2 fertilization effects in managed forest areas are usually included in Parties' LULUCF inventories, while global IPCC-assessed scenarios for anthropogenic-only emissions do not include these fluxes, which are a response of the natural carbon cycle to elevated concentrations of CO_2. In other words, the main difference between LULUCF emission data reported by Parties and the estimates of anthropogenic net emissions from land use that form the basis of the emissions scenarios in the IPCC databases is the treatment of indirectly induced CO_2 sinks on managed land.[7] In order to estimate total emissions for the 2026 synthesis report consistently with the global emission estimates under the AR6 SSP scenarios, global aggregate emissions were adjusted for these indirectly induced CO_2 sinks. Under the AR6 scenarios, only directly induced anthropogenic sinks are included in the anthropogenic emission estimates. In line with the update to the 2025 synthesis report,[8] the 2026 synthesis report subtracts an independent estimate of this indirect atmosphere-to-land flux from the global aggregate estimate for LULUCF.[9] A change in ambition by a Party that is focused on LULUCF emissions is thereby fully reflected in the global anthropogenic-only emission time series aggregated in this 2026 synthesis report, while the total emission estimates presented are comparable with those of the scenarios assessed in the AR6 and any processed with the same harmonization and infilling pipelines to ensure consistent anthropogenic emission projections.

[6] See Canadell JG, Monteiro PMS, Costa MH, et al. 2021. Global Carbon and other Biogeochemical Cycles and Feedbacks. In: Masson-Delmotte V, Zhai P, Pirani A, et al. (eds.). Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge and New York: Cambridge University Press. pp.673–816. Available at https://doi.org/10.1017/9781009157896.007. Figure 5.5 is available at https://www.ipcc.ch/report/ar6/wg1/figures/chapter-5/figure-5-5.

[7] See Grassi G, Stehfest E, Rogelj J, et al. 2021. Critical adjustment of land mitigation pathways for assessing countries' climate progress. Nature Climate Change. 11(5): pp.425–434. Available at https://www.nature.com/articles/s41558-021-01033-6.

[8] See the update of 10 November 2025 to the 2025 synthesis report (FCCC/PA/CMA/2025/8) and its technical document, available at https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs/2025-ndc-synthesis-report.

[9] The estimate used is the indirect CO_2 flux from land use ('LULUCF Indirect') in phase 5 of the scenarios of the Network for Greening the Financial System (NGFS), downscaled from the model GCAM 6.0 NGFS, available at https://data.ene.iiasa.ac.at/ngfs/.

H. Warming projections

13. Global mean temperature outcomes are projected with a reduced complexity climate model that was used for and is calibrated to the AR6 and is equivalent to the version used for the AR6 Working Group III scenario classification, namely the Model for the Assessment of Greenhouse Gas Induced Climate Change.[10] Every reported warming range spans multiple cases (cf. paragraph 5 above), including the capped and uncapped NDC levels, both continuations beyond the last target year described in paragraph 8 above, namely the reference 'current policy' scenario and constant emissions, and unconditional only and full implementation variants. NDC-only projections extend the 2023–2035 trend in global non-LULUCF emissions linearly from 2035 to 2050 (for submissions recorded before July 2025, when the latest targets were for 2030, the 2018–2030 trend from 2030), after which AR6 scenario characteristics are followed. Projections for NDCs, together with LT-LEDS, incorporate the communicated long-term targets, with constant emissions or reference continuation beyond each Party's last retained target year until 2060, after which the same AR6-based extension is applied to global non-LULUCF emissions. Reported ranges span the emission cases, either for the median (50th percentile) climate response or together with the climate response uncertainty (10^{th} to 90^{th} percentile). Earlier rounds of submissions are reassessed in terms of their warming outcomes with the same data, quantification methods and climate model.

I. Per capita emissions, reference years, scenario benchmarks and carbon budgets

14. Per capita emissions of a group of Parties are the group's emissions divided by the group's population, taken from the United Nations World Population Prospects 2024.[11] Per capita emissions of the AR6 scenario categories (see para. 16 below) use the global population of each pathway; pathways that report no population are omitted. Per capita comparisons exclude LULUCF.

15. A change relative to 2019, 2023 or 2024 is measured from one fixed historical value of that year for every pathway and every NDC case, namely the historical global total of the harmonized world time series including LULUCF (56.1 Gt CO_2 eq in 2019) or, for a group of Parties, the group's historical total; the values for every base year are given in note (b) to table A.1. The change is calculated for each pathway and each NDC case before the statistics across them are derived. The most recent historical year (2024) is used in place of 2025, whose emissions are not yet available as historical data. The one exception relates to the AR6 categories relative to 2019; as in the AR6, each pathway is measured from its own 2019 level, and the pathways used reproduce the published AR6 statistics relative to 2019.

16. The IPCC benchmarks are the infilled and harmonized pathways of the Working Group III AR6 scenario database[12] for total emissions of the GHGs covered by the Kyoto Protocol, including LULUCF (100-year GWP values from the AR6): C1, limiting warming to 1.5 °C with no or limited overshoot; C3a, likely below 2 °C with immediate action; C2–P3b, 1.5 °C after high overshoot with delayed action from 2030; and C3–P3b, likely below 2 °C with delayed action from 2030. The number of pathways in each of these four IPCC AR6 scenario sets is given in note (d) to table A.1. All pathways carry equal weight; scenario levels are shown as the median with the interquartile range, and changes as the median with the 5^{th} to 95^{th} percentile range. Emission gaps pair every NDC case with every benchmark pathway and are shown as the median of the differences with their interquartile range.

17. Cumulative CO_2 emissions from 2026 to 2035 are derived for each NDC case from the harmonized world GHG pathways and compared with the remaining carbon budgets from

[10] See https://live.magicc.org/.

[11] United Nations, Department of Economic and Social Affairs, Population Division. 2024. World Population Prospects 2024. Available at https://population.un.org/wpp/.

[12] Byers E, Krey V, Kriegler E, et al. 2022. AR6 Scenarios Database. Version 1.1. Integrated Assessment Modeling Consortium and International Institute for Applied Systems Analysis. Available at https://doi.org/10.5281/zenodo.7197970.

the start of 2026 from Forster et al. (2026),[13] for which the AR6 methodology was applied: 130 Gt CO_2 for limiting warming to 1.5 °C (50 per cent likelihood) and 860 Gt CO_2 for below 2 °C (67 per cent likelihood).

J. Key methodological challenges

18. Key challenges relate to the diversity of target formulations, addressed through the above-mentioned type-specific methods; missing information on metrics, coverage or baselines, or on which GWP values were used; the treatment of conditionality; and the different approaches to estimating, projecting and accounting for LULUCF emissions and removals. The treatment of LULUCF is considered on a Party-by-Party basis, including with regard to specific accounting rules and considering Party-specific projections with existing measures from biennial transparency reports, where available, and totals are reported excluding LULUCF unless otherwise specified. In order to account for the fact that LULUCF removals reported and projected by Parties are not limited to direct anthropogenic removals, a harmonization adjustment is applied to improve comparability with the anthropogenic land-use emissions and removals represented in IPCC-assessed scenarios. Compared with earlier rounds, targets in the new NDCs are generally more clearly defined in quantitative terms, which reduces quantification uncertainty.

II. Notes to selected figures and tables of the 2026 UNFCCC NDC Synthesis Report

19. **Figure 15. Coverage of the new NDCs: share of Parties and of global emissions**: NDCs as at 31 August 2026; new NDCs are NDCs recorded in the registry since 1 January 2024. The grid represents the 198 Parties to the Convention. A square represents a Party to the Paris Agreement, of which there are 194; a cross represents one of the four Parties to the Convention that are not Parties to the Paris Agreement. The European Union is a Party in its own right and is counted as one in addition to its member States; its emissions are those of its member States and are counted under the member States only. Emissions are total GHGs without LULUCF in 2019, as a share of the total global figure. The rest of the world total comprises international aviation and shipping and the harmonization of that total to the emission history of the IPCC-assessed scenarios.

20. **Figure 16. Global emissions and aggregate emissions of Parties with new NDCs**: The group consists of the 138 Parties with a 2035 target in their new NDCs. Ranges span the four NDC cases (see para. 5 above), from the implementation of unconditional elements only, through to the full implementation of all elements, including conditional ones. The global range is shown until 2035. Earlier states of the latest submissions at various cut-off dates (the INDCs as at 4 April 2016 and the NDCs as at 31 December 2023) are shown for both the group and the global total; the same group of Parties and the global total were reassessed from the submissions as at those dates, with the same data and methods (see para. 1 above), so that the comparison between states of submissions reflects changes in submissions rather than changes in data or methodological assumptions. Within each colour family, a darker shade indicates a more recent cutoff state of submissions.

21. **Figure 17. Per capita emissions of Parties with new NDCs, against benchmark scenarios**: The group consists of the 138 Parties with a 2035 target in their new NDCs; the population is the medium variant from the United Nations World Population Prospects 2024. The group's per capita emissions are its own emissions divided by its own population. The AR6 categories are globally averaged per capita emissions, shown as the interquartile range with the median. By 2050 the group's long-term visions imply per capita emissions of 3.1 (2.7–3.4) t CO_2 eq, the mean with the full range across the ambition and conditionality cases. AR6 per capita estimates use pathways with reported model population (C1: 96 of 97; C3a: 187 of 204; C2–P3b: 40 of 42). Pathways without population data are omitted; no population values are substituted.

[13] Forster PM, Walsh T, Smith C, et al. 2026. Indicators of Global Climate Change 2025: annual update of key indicators of the state of the climate system and human influence. Earth System Science Data. 18(6): pp.3889–3933. Available at https://doi.org/10.5194/essd-18-3889-2026.

22. **Figure 23. Global emission history and NDC projections**: Before the Paris Agreement: Range of upper three IPCC-assessed SSP scenarios: SSP4-6.0, SSP3-7.0 and SSP5-8.5. All NDCs as at 31 August 2026, including 154 Parties with a new NDC.

23. **Figure 24. Projected emission pathways: levels, gaps and changes from 2019**: In panel (a), AR6 categories are shown as the interquartile range with the median. Panel (b) shows the gaps to the four IPCC AR6 scenario groups, C1, C3a, C2–P3b and C3–P3b: for each, every NDC case is paired with every benchmark pathway, and the bar is the median of the differences with their interquartile range. Panel (c) indicates the change in per cent of the C1 and C3a AR6 pathways from its own 2019 level, the basis on which the AR6 reported its emission reductions, and of each NDC case from one fixed level, namely the historical 2019 global total of the harmonized world time series (56.1 Gt CO_2 eq); the figure shows, for the NDCs, the mean and the full range across the ambition and conditionality cases, and for each set of scenarios, the median and the 5th to the 95th percentile range.

24. **Figure 25. Projected cumulative CO_2 emissions against the remaining carbon budgets**: Cumulative CO_2 for 2026–2035 is derived separately for each complete ambition and conditionality case of the NDC quantifications of the harmonized world GHG pathways, using the year and level CO_2 average shares of the global GHG emission time series; the small arcs show the minimum–maximum range of emissions until a particular year, and dots show the mean. The red outer arc shows emissions beyond the 1.5 °C budget. Historical emissions are 2,390 ± 240 Gt CO_2 for 1850–2019 (contribution of Working Group I to the AR6, table SPM.2); approximately 250 Gt CO_2 were emitted in 2020–2025. Remaining budgets from the start of 2026 are taken from table 8 of *Indicators of Global Climate Change 2025* (Forster et al., 2026).

25. **Figure 26. Progression of global mean temperature projections for respective state of submissions at successive dates**: Observed warming is based on the Met Office Hadley Centre/Climatic Research Unit global surface temperature data set (HadCRUT5),[14] shown as the annual global mean anomaly relative to 1850–1900 with its uncertainty range. The pre-Paris Agreement 'business-as-usual' range spans SSP4-6.0, SSP3-7.0 and SSP5-8.5. The other columns show assessed temperature ranges for NDC submissions recorded as at 4 April 2016, 12 November 2025 and 31 August 2026. The pale outer plume spans the lower 10th percentile to upper 90th percentile boundary; the darker inner plume spans the lowest to highest median (50th percentile) projection across the assessed scenarios. The second, third and fourth panel show NDC-only projections; the fifth panel shows NDCs together with LT-LEDS. The values labelled at 2100 are those of the four plume boundaries in2100. The submissions recorded as at each cut-off date are all assessed with the quantification methods and the climate model used for the 2026 synthesis report.

Table A.1 Emission reductions across NDCs and various IPCC AR6 scenario sets

Shown values are global GHG emissions including LULUCF using100-year GWP values from the AR6. Stated values in the table state percentages below the reference year.

The central values and ranges indicate medians and 5th–95th percentiles for IPCC AR6 scenarios and means and full minimum-maximum ranges for this report's aggregate global emission estimates aligned with submitted NDCs and LT-LEDs

REDUCTIONS RELATIVE TO 2019 (%)					
Pathway/scenario	**2030**	**2035**	**2040**	**2045**	**2050**
Global, under NDC + LT-LEDS Latest NDCs and long-term projections	**3.3** (0.0–6.8)	**5.9** (0.4–11.7)	—	—	**42.4** (33.6–51.8)
Global, under NDC + LT-LEDS, capped by current policy NDC levels capped at Party-level current policy projections	**11.6** (9.8–13.4)	**16.9** (14.2–19.5)	—	—	**51.2** (45.3–57.2)

[14] Morice CP, Kennedy JJ, Rayner NA, et al. 2021. An updated assessment of near-surface temperature change from 1850: the HadCRUT5 data set. Journal of Geophysical Research: Atmospheres. 126(3): e2019JD032361. Available at https://doi.org/10.1029/2019JD032361.

Below 2 °C (>67%) • C3–P3b Delayed action from 2030	**5.3** (0.0–14.1)	**29.8** (20.3–49.9)	**46.3** (33.8–63.4)	**58.6** (44.7–73.4)	**67.5** (55.7–81.6)
1.5 °C (>50%), high overshoot • C2–P3b Delayed action from 2030	**2.7** (−0.1–7.1)	**30.7** (20.9–50.5)	**51.6** (36.7–74.4)	**65.3** (48.7–84.0)	**74.9** (63.8–94.8)
Below 2 °C (>67%) • C3a Immediate action after 2020	**27.0** (12.7–45.3)	**37.4** (24.5–55.8)	**46.5** (34.6–63.1)	**55.6** (43.2–70.6)	**63.3** (52.3–76.3)
1.5 °C (>50%), no or limited overshoot • C1 Immediate action after 2020	**43.3** (34.0–60.2)	**59.7** (48.5–77.2)	**68.9** (58.1–89.6)	**77.6** (66.2–93.1)	**84.2** (73.3–98.2)

REDUCTIONS RELATIVE TO 2023 (%)					
Pathway/scenario	**2030**	**2035**	**2040**	**2045**	**2050**
Global, under NDC + LT-LEDS Latest NDCs and long-term projections	**4.6** (1.3–8.1)	**7.2** (1.7–12.9)	—	—	**43.2** (34.5–52.4)
Global, under NDC + LT-LEDS, capped by current policy NDC levels capped at Party-level current policy projections	**12.8** (11.0–14.5)	**18.0** (15.4–20.6)	—	—	**51.8** (46.0–57.8)
Below 2 °C (>67%) • C3–P3b Delayed action from 2030	**8.4** (2.1–17.7)	**31.6** (21.7–52.0)	**48.3** (36.3–64.5)	**59.6** (47.5–74.4)	**69.0** (55.5–82.5)
1.5 °C (>50%), high overshoot • C2–P3b Delayed action from 2030	**5.3** (0.2–10.7)	**33.5** (21.8–52.6)	**53.6** (40.0–74.1)	**66.3** (52.3–85.1)	**75.1** (66.4–94.8)
Below 2 °C (>67%) • C3a Immediate action after 2020	**29.1** (14.1–47.2)	**39.4** (27.1–57.2)	**48.2** (36.1–63.3)	**57.1** (44.9–70.9)	**64.8** (53.2–76.2)
1.5 °C (>50%), no or limited overshoot • C1 Immediate action after 2020	**44.7** (36.4–62.2)	**60.9** (49.8–77.8)	**69.9** (59.2–90.2)	**78.6** (66.3–93.3)	**84.9** (74.1–98.2)

REDUCTION RELATIVE TO 2024 (%)					
Pathway/scenario	**2030**	**2035**	**2040**	**2045**	**2050**
Global, under NDC + LT-LEDS Latest NDCs and long-term projections	**5.3** (2.0–8.7)	**7.8** (2.4–13.5)	—	—	**43.6** (34.9–52.8)
Global, under NDC + LT-LEDS, capped by current policy NDC levels capped at Party-level current policy projections	**13.4** (11.6–15.1)	**18.6** (16.0–21.1)	—	—	**52.2** (46.4–58.1)
Below 2 °C (>67%) • C3–P3b Delayed action from 2030	**9.0** (2.8–18.3)	**32.1** (22.3–52.4)	**48.7** (36.8–64.8)	**59.9** (47.9–74.5)	**69.2** (55.8–82.6)
1.5 °C (>50%), high overshoot • C2–P3b Delayed action from 2030	**6.0** (0.9–11.3)	**33.9** (22.3–52.9)	**54.0** (40.4–74.2)	**66.5** (52.7–85.2)	**75.2** (66.7–94.8)
Below 2 °C (>67%) • C3a Immediate action after 2020	**29.6** (14.7–47.6)	**39.9** (27.6–57.5)	**48.6** (36.5–63.6)	**57.4** (45.3–71.1)	**65.0** (53.6–76.4)
1.5 °C (>50%), no or limited overshoot • C1 Immediate action after 2020	**45.1** (36.9–62.5)	**61.1** (50.1–78.0)	**70.1** (59.5–90.2)	**78.8** (66.5–93.3)	**85.0** (74.3–98.3)

26. **Notes to table A.1**

(a) Reduction = 100 × (1 − target-year emissions / base-year emissions), calculated for each pathway and each NDC case before the ensemble is summarized. Negative values would indicate increases in emissions; values above 100 would indicate net negative emissions.

(b) Bases: historical global totals of the harmonized world time series, including LULUCF: 56.1 Gt CO_2 eq in 2019, 56.9 Gt CO_2 eq in 2023 and 57.3 Gt CO_2 eq in 2024, the most recent historical year. AR6 categories relative to 2019 are measured from each pathway's own 2019 level, as in the AR6.

(c) NDC + LT-LEDS: four ambition/conditionality cases; the range is not a percentile range. The capped case limits each Party's NDC level to an illustrative 'current policy' projection. The 2050 values include long-term targets and extrapolation assumptions, as described in paragraphs 7 and 8 above.

(d) Ensembles: AR6 scenarios C1: 97 pathways; C3a: 204 pathways; C2–P3b: 42 pathways; and C3–P3b: 97 pathways.