

Pre-COP30: how are temperatures tracking on the latest climate targets?

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Acronyms:

APAC - Asia Pacific

AR6 - Assessment Report 6

CDR - Carbon Dioxide Removal

COP - Conference of the Parties

GWP - Global Warming Potential

IEA - International Energy Agency

IPCC - Intergovernmental Panel on Climate Change

IRENA - International Renewable Energy Agency

LT-LEDS - Long-Term - Low Emission Development Strategies

NDC - Nationally Determined Contribution

NGFS5 - Network for Greening the Financial System Phase 5

UNEP - United Nations Environment Program

UNFCCC - United Nations Framework Convention on Climate Change

Summary

Around 125 countries have now submitted, announced or described plans for 2035 emissions reduction goals in the last 12 months. These build on the near-term, 2030 and long-term targets previously announced by 198 Parties to the Paris Agreement. It is timely to take stock of the warming that current targets imply, and what actions are needed to deliver the emissions reductions targeted. These questions are front and centre as the world prepares for COP30 in Belém, and Australia and the Pacific consider the agenda for the 12 months ahead, should the bid to co-host COP31 succeed.

Our modelling shows that the best estimate of projected warming is 1.9°C (1.8°C-2.0°C) if all targets are met in full, and overall there is no backsliding from current policies and from the constraints that they impose on future emissions (Figure S-1). The range captures conditions and ranges in Nationally Determined Contributions (NDCs) and long-term targets, and assumptions regarding emissions pathways beyond 2030 for the 20% of emissions not yet covered by long-term targets.

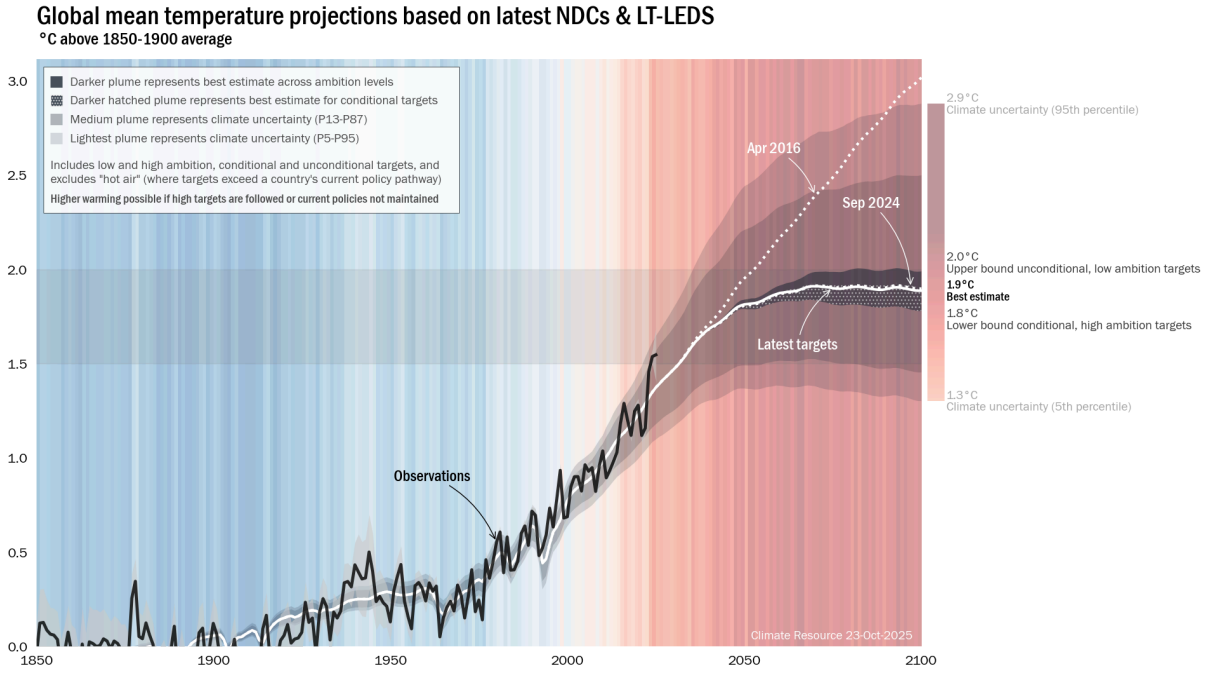


Figure S-1. Projected warming under latest NDCs, long-term targets and current policies.
Source: Climate Resource

The 2035 NDCs submitted and announced to date have affirmed the world's ambition to pursue a straight path towards long-term and net-zero targets, taken as a whole. Many countries have yet to submit quantifiable 2035 targets, including some large emitters. If the remaining 2035 targets set a straight line to long-term net-zero goals, or stronger, projected warming will continue to be just below 2°C.

This is marked progress relative to the 3°C-plus pathways implied by targets in 2016 when the Paris Agreement was signed. All elements of the NDCs need to be delivered, so that the 1.8°C end of the targeted range can be achieved. Implementation of a credible and ambitious agenda towards COP31 that delivers the ambitious end of NDCs, can maintain feasible options for closing the gap towards 1.5°C. Two important pillars of that agenda will be:

- An approach to international trade and finance flows that achieves countries' conditional NDCs in full.
- A clear roadmap to 2035 that provides the 1.5°C-aligned global path for core, measurable outcomes such as renewable energy capacity, energy efficiency, and electrification, and the methane reductions needed to deliver and extend the global methane pledge.

Introduction

Achieving ambitious emissions targets for 2035 is critically important to global efforts to limit warming and avoid the worst consequences of climate change. Meeting strong 2035 targets can help close the gap towards 1.5°C. Weak targets or action risk placing it out of reach. The 2035 targets submitted will show if countries are reaffirming their commitments to existing net-zero targets and keeping open the possibility of further strengthening of targets, or alternatively stepping back and making the path to net-zero less feasible.

Nearly 100 countries met in New York for the UN Climate Summit at the end of September, including 36 Heads of State. It was a clear show of commitment to international cooperation to address climate change and deliver the goals of the Paris Agreement, despite the continuing broader geopolitical uncertainty.

Including announcements at the Climate Summit, 125 countries now have new targets and plans for 2035, covering nearly 80% of global emissions. Of those, 64 have submitted new NDCs since 1 January 2024. More are expected in the lead-up to COP30 in Belém in November, including key countries such as India, Indonesia, Mexico, South Africa, and South Korea.

In the coming weeks, the focus for mitigation will be on: targets from countries that are yet to submit, and progressing actionable plans to reduce emissions at a rate at least sufficient to deliver the targets. This will depend on international finance, trade and other support to ensure that all targets are met in full, including those that are conditional on support from the international community.

This brief updates warming projections to provide context for those discussions as we head into COP30. It outlines

- The enduring role of the 1.5°C, in the context of recent updates on the state of the science and the feasibility of limiting warming to 1.5°C.
- Projected warming if countries achieve their targets, taking into account NDCs submitted and announced as of 6 October 2025.
- The impact on warming of international cooperation and finance to enable all countries to achieve their targets in full.

1.5°C is still in play, if we act now

The Paris Agreement commits countries to **hold the increase in global average temperature to well below 2°C, and to pursue efforts to limit it to 1.5°C** (Article 2.1a). It does not define how the temperature goal is measured. In practice, two interpretations are commonly used:

- As a **20-year average**, consistent with how the IPCC quantifies global warming levels;
- As a **2100 target**, aligned with the goal of reaching net-zero greenhouse gas emissions by the second half of the century (Article 4.1).

Some have prematurely concluded that the 1.5°C goal is already out of reach. That is not the case.

- **Annual** global surface temperatures have already exceeded 1.5°C in individual years. The WMO confirmed that 2024 was likely the first year with a global average temperature more than 1.5°C above pre-industrial levels (estimated at 1.55 ± 0.13°C).[1]
- **In the multi-year average**, multi-year exceedance of 1.5°C is expected soon. There is a 70% chance that the five-year average warming from 2025–2029 will be above 1.5°C.[2]

Nevertheless, concerted climate policy efforts can still achieve feasible pathways that - after a mid to high overshoot of 1.5°C - could reduce warming near to or even below 1.5°C by 2100.

[1] World Meteorological Organization. (2025). State of the Global Climate 2024.
[2] World Meteorological Organization. (2025). Global Annual to Decadal Climate Update (2025–2029).

Two lines of evidence for assessing the feasibility of limiting long-term warming to 1.5°C in 2100 - the remaining carbon budget and projected emissions and warming under different scenarios - show that global emissions have not declined fast enough to avoid overshoot:

- The latest update from the Indicators of Global Climate Change suggests that the remaining carbon budget for a 50% chance of limiting warming to 1.5°C is just **130 $GtCO_2$** (as of January 2025).[3] At current annual emissions (~40 $GtCO_2$/year), this budget will be **exhausted in a little over three years**.
- Feasible scenarios for limiting warming to, or close to, 1.5°C now involve overshooting the target temporarily, and then returning to it later in the century. Three IPCC Sixth Assessment Report (AR6) scenario families include overshoot pathways:
    - **C1 scenarios** have limited warming overshoot (up to 1.6°C) returning to 1.5°C or below by 2100.[4]
    - **C2 scenarios** have higher overshoot (up to 1.8°C), still returning to 1.5°C by 2100.[5]
    - **C3b scenarios** limit warming to 2°C and return warming to 1.6°C by 2100 with 50% likelihood, and to 1.5°C with less than 50% likelihood. They include emissions until 2030 consistent with NDCs announced prior to COP26, followed by accelerated emissions reductions [6]

In these scenario families, warming declines by 2100 due to a combination of achieving net-zero greenhouse emissions (this cuts emissions of short-lived climate forcers like methane, which may provide a relative cooling effect);[7] and deploying carbon dioxide removal (CDR) to achieve net-negative emissions later in the century. Many C2 scenarios assume high levels of CDR that may not be achievable, particularly those from technologies for permanent geological storage.

C1 pathways no longer seem feasible due to the lack of steep emissions reductions in the early 2020s. This was discussed at a UNEP-convened scientific dialogue in June 2025. **C2 and C3b pathways may remain possible**, but require strong global action starting from 2025. New scenarios that will explore high-overshoot pathways are expected to be published in the lead-up to COP31.

The latest NDCs suggest a global emissions peak, but are not on track for 1.5°C

Limiting warming to 1.5°C by 2100 depends on the speed and scale of emissions reductions starting now. Progress toward this goal should be maximised, not framed as a simple pass or fail. The 2035 NDCs will shape what remains possible. As of 22 October, 125 countries have submitted new NDCs or made announcements, covering approximately 80% of global emissions. Some, but not all, of these countries have provided sufficient information in the NDCs submitted or in announcements to enable us to quantify the emissions implications. This includes major emitters such as China, the USA (Biden Administration), Brazil, Canada, Japan, and Russia. Major emitters yet to submit include India, Indonesia, Mexico, South Korea, and South Africa.

If all existing and announced NDCs and net-zero targets are implemented, projected warming is between **1.8°C-2.0°C in 2100 (best estimate 1.9°C)**, Figure 1. The range is due to conditional and unconditional elements of NDCs, ambiguity in the expression of NDCs and long-term targets, and methods for extrapolating emissions not yet covered by a long-term target. The range is widened with climate uncertainty. Emissions pathways underpinning warming projections in Figure 1 are in Figure 2 compared to IPCC AR6 C1, C2, and C3 pathways.

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[3] Forster,et al. (2025). Indicators of Global Climate Change 2024: Annual update of key indicators of the state of the climate system and human influence. Earth System Science Data, 17(6), 2641–2680.
[4] Nicholls, et al. (2022). Changes in IPCC Scenario Assessment Emulators Between SR1.5 and AR6 Unraveled. Geophysical Research Letters, 49(20).
[5] IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to AR6 of the IPCC, Table SPM.2 and Fig SPM.4. Return to warming in 2100 is with a 50% probability.
[6] Ibid.
[7] IPCC. (2018). Figure 1.5: Warming commitment from past emissions of greenhouse gases and aerosols (Chapter 1 of Global Warming of 1.5°C – Special Report).

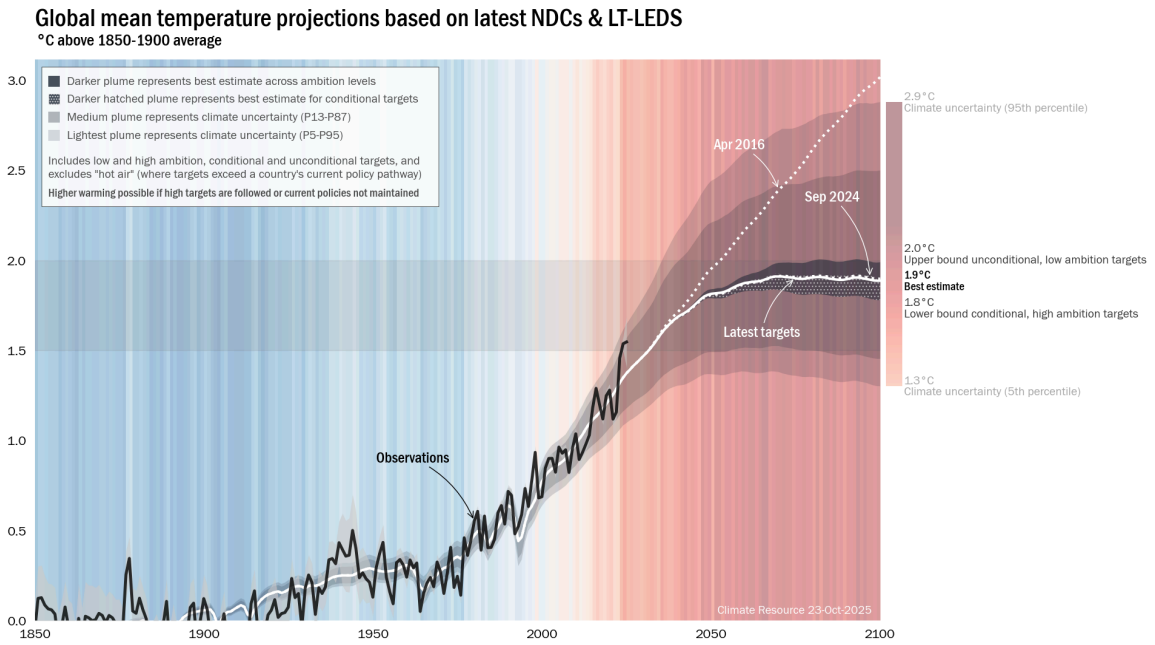


Figure 1: Projected warming under latest NDCs, long-term targets and current policies.
Source: Climate Resource. [Note: Projections include all quantifiable announcements regarding 2035 targets.]

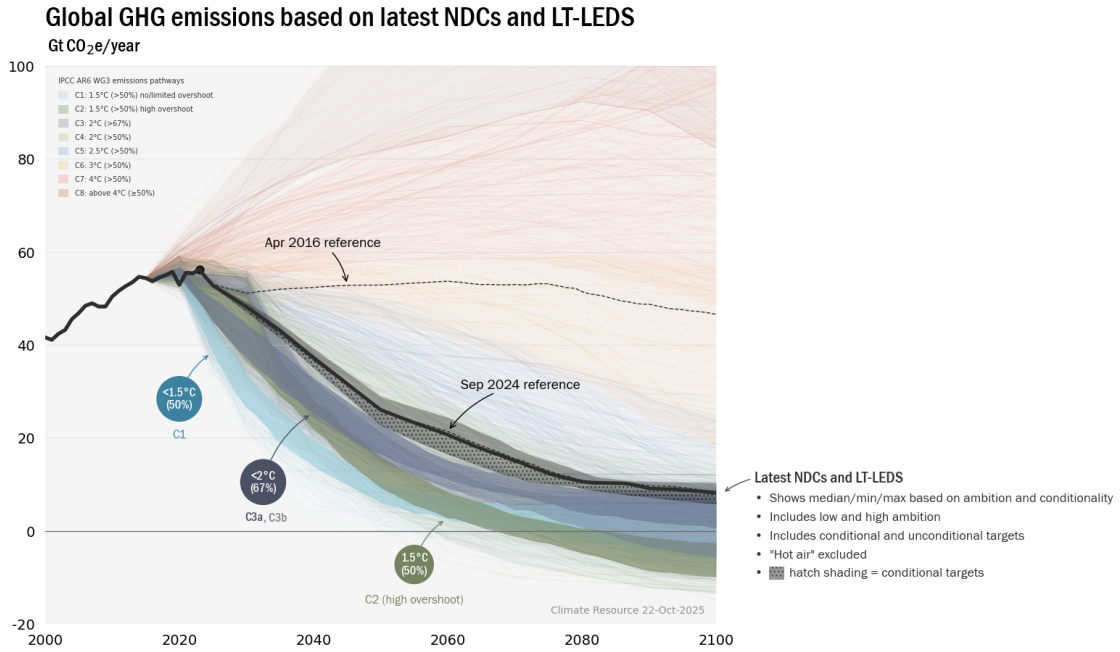


Figure 2: Projected emissions under latest NDCs, long-term targets and current policies.
Source: Climate Resource. [Note: emissions are expressed as AR6 GWP100. Pathways are constructed by interpolating country emissions between targets, or for countries without long-term targets, extrapolating emissions based on reference pathways reflecting emissions under existing policies. Global emissions are constructed by aggregating country emissions, shipping, and aviation, including an adjustment for indirect LULUCF (following Grassi et al)[8], and harmonising to historical 2015 emissions.]

[8] 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.

Climate Resource

There has been substantial progress since COP21 in late 2015 and the conclusion of the Paris Agreement. In 2016, the projected warming if countries met all their targets was over 3°C. If emissions remain at levels consistent with 2030 and 2035 NDCs, and do not continue on a path towards long-term targets, warming is expected to be considerably higher. However, evaluating warming based only on short-term targets no longer gives the clearest view of the course the world has set. The 2035 NDCs submitted and announced have affirmed the ambition to broadly follow a straight line to net zero targets, in aggregate. Individual countries vary: some have 2035 targets that show a faster or slower reduction than required for a straight line, and some are on that line. Taken as a whole, these new targets represent commitments to delivering a step change in the pace of emissions reductions and to achieving the long-term targets.

Overall, this analysis adopts an optimistic slant. In particular, six points are useful to highlight in considering the implications; the projected warming assumes that:

1. Countries achieve the targets that they have set. Delivering the policies and the changes in trade and financial flows needed to implement NDCs must be a core focus of countries' domestic action and the international agenda.
2. The 2035 NDCs not yet submitted, in aggregate, deliver ambition at least sufficient to keep emissions on a straight line to existing next zero targets. Insufficient ambition in the 2035 targets submitted in the coming weeks risks placing even 2°C out of reach.
3. Countries' emissions, at most, reflect projections under existing policies. This assumption is particularly important for those that do not yet have substantive 2035 or net-zero long-term targets.[9]
4. Some countries have targets that are less ambitious than emissions under current policy projections. In these cases, we assume future emissions reflect current policy projections, rather than the target. For those countries with targets well above current policy projections due to high reference baselines, this approach excludes that 'hot air' - Pakistan, Bangladesh or Turkey, for example. In other cases, current policy projections may now reflect effective policy implementation since the target was first set, and we take this potential 'overachievement' of targets into account in our projections.[10]
5. Climate policies must not only continue but ratchet up to compensate for the warming impact of any policy rollback by an individual party. The Trump Administration's decision to exit the Paris Agreement and roll back climate policies is front of mind. It remains unclear to what extent state-level and other sub-national targets and policies will drive emissions reductions in the US. Recent projections suggest emissions reductions in 2035 of 26% to 35% below 2005 levels, which is a meaningful shift from projections in 2024 of 38% to 56% reduction at that point.[11]
6. Warming of 1.8°C-1.9°C is projected in 2100 if countries achieve their NDCs in full and deliver the long-term targets already set. This level of ambition has been put forward and can be achieved. But it means delivering all conditional elements of NDCs, which are contingent on support from the international community.

[9] For these countries, it is necessary to make assumptions about future emissions pathways. In this analysis, we assume emissions reflect projections under current policies.
[10] Constraining emission projections to current policy projections affects in particular projections for countries that have rising emissions in the near term, and that do not have long-term targets. Without this constraint the upper range of the projected warming could be around 2.3°C or higher.
[11] Rhodium Group, September 2025.Taking Stock 2025: US Energy and Emissions Outlook https://rhg.com/research/taking-stock-2025/

4. International transition finance is core to delivering the 1.5°C goal

A clear implication is that achieving the 1.8°C-1.9°C warming implied if all current targets are met in full, relies on both strong domestic action and international finance and support. This is also critical if we are to limit end-of-century warming to 1.5°C, even after high overshoot.

The 1.5°C target remains at the centre for climate finance architecture. It is core to the New Collective Quantified Goal on Climate Finance, established under the Paris Agreement, agreed at COP29, and certain to be again in focus at COP30 in Belém for:

- Delivering mitigation and adaptation within countries, and internationally;
- Supporting just transitions; and
- Financing loss and damage responses.

Every fraction of a degree of warming increases climate risks and costs. Warming beyond 1.5°C brings:

- Greater risks to food and water security, health, and ecosystems;
- Higher adaptation costs and challenges; and
- Greater likelihood of irreversible impacts (e.g. sea level rise, biodiversity loss).

Overshoot also matters. The higher and longer the overshoot, the more severe and persistent the consequences. Not all impacts are expected to reverse in line with global temperature; for example, changes to ocean chemistry and polar ice may persist even if warming declines. There are still knowledge gaps in how climate risks unfold after overshoot, especially between 1.5°C and 2°C, and at local or regional scales.[12]

The 1.5°C goal is both a scientific benchmark and **legally, the enduring reference point and standard for action.** It is embedded in the Paris Agreement and broader UNFCCC framework. In July 2025, the International Court of Justice issued an extensive advisory opinion, affirming that states have legal duties under international law to prevent significant harm to the climate system and highlighted 1.5°C as the binding temperature target. It held states responsible for emissions from the production of fossil fuels, as well as consumption, bringing Australia's fossil fuel exports squarely into frame.[13]

If a country's domestic mitigation ambition is not a sufficient contribution to global efforts to limit warming, these obligations may be met through greater contributions to international efforts. As Australia and the Pacific prepare to meet in Belém and pursue the bid to co-host COP31, two pillars of a credible and ambitious agenda could be:

- An approach to international trade and finance flows to achieve countries' conditional NDCs in full.
- A clear roadmap to 2035 that provides the 1.5°C-aligned global path for core, measurable outcomes such as renewable energy capacity, energy efficiency, and electrification.

Finance for delivering all elements of NDCs

If all elements of NDCs, including conditional elements, are taken into account, the best estimate of 2100 warming is 1.8°C to 1.9°C (see Figure 1). These conditional elements reflect what countries have stated they will achieve, contingent on financial, technical and other forms of support from the international community. Conditional targets are included by many lower-middle and low-income countries as they balance development priorities, and in recognition of different capabilities and responsibilities. In contrast, the warming of between 1.9°C to 2.0°C shown in Figure 1 is implied by targets that countries have stated they will deliver based on domestic capacity alone (referred to as unconditional targets).

[12] Schleussner, CF., Ganti, G., Lejeune, Q. et al. Overconfidence in climate overshoot. Nature 634, 366–373 (2024). https://doi.org/10.1038/s41586-024-08020-9

[13] The Court held that 1.5°C is the legally binding temperature target under the Paris Agreement and international law: para [224]. If States breach their obligations under international law, they will be liable to provide restitution, compensation or satisfaction to States harmed by climate change: para [450]. This could involve reconstructing infrastructure and restoring ecosystems or monetary compensation: paras [451]-[454]

The Asia Pacific region is key. The largest emitters and Australia's largest trading partners remain core, including China, India, Japan, and South Korea. But solely focusing on those is not sufficient. APAC countries with conditional NDC targets for 2030 or 2035, that are or are projected to become, large emitters include Indonesia, Pakistan, the Philippines, Thailand, and Vietnam. A high ambition agenda requires a focus on what changes in these economies and in sectoral emissions can deliver their conditional targets. It can inform the policy mechanisms and the domestic and international investment necessary to catalyse commercially viable projects at the scale required to deliver 2035 NDC targets in full.

A 1.5°C aligned path to 2035

A global roadmap to 2035 that identifies the changes in the physical economy required to close the gap to 1.5°C can play a key role in supporting the policy, planning and investment at the scale required. Goals such as tripling renewable energy and doubling energy efficiency by 2030 relative to 2020 (COP28), and reducing methane emissions by 30% by 2030 (COP26), are examples of clear, coherent measurable outcomes needed. It is time to extend the roadmap to 2035 as 2030 nears and 2035 NDCs are set.

The task is to define the scale of change in renewable energy, energy efficiency and methane reductions by 2035 that can close the gap to a medium overshoot of 1.5°C and long-term return below 1.5°C. These existing metrics could be extended to include electrification. They would together provide measurable markers of the progress required, against which progress can be tracked. The ensembles of scenarios produced by global integrated assessment modelling teams, the IEA, and others such as IRENA can be used to synthesise an evidence base for these targets. This can make clear the differences between outcomes for the energy sector that help deliver the long-term temperature goal, and those that will likely be insufficient to bring overshoot pathways back towards 1.5°C by 2100.

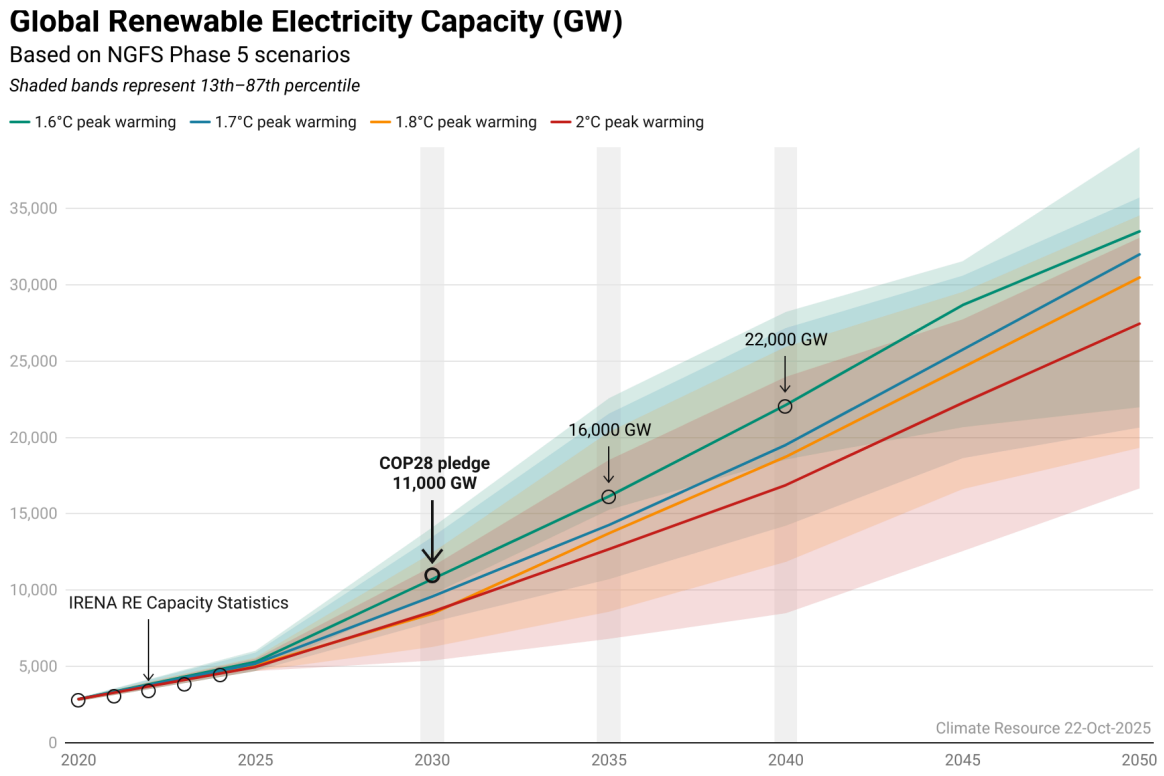


Figure 3: Global installed capacity of renewable energy aligned with peak warming of 1.6°C to 2°C. Source: based on Climate Resource processing of NGFS5 (Network for Greening the Financial System Phase 5) scenarios. [Note: These are indicative estimates. If these scenarios incorporate more carbon dioxide removal than is now feasible, they risk underestimating the reduction in emissions required in early decades. Our projections will be updated as new scenario ensembles are published in the coming months.]

5. Conclusion

Given the 2035 NDCs and long-term climate targets submitted to date, the world is now on track for a peak in global emissions. Unless yet-to-be-submitted 2035 NDCs, including from countries like India, Indonesia and others, reverse this trend, emissions are projected to decline below current levels by 2035, even under the most pessimistic scenarios.

This marks a positive and encouraging milestone. However, 2025 is also the year the world must come to terms with the likelihood that the window to limit warming to 1.5°C with only limited overshoot (up to 1.6°C) has closed. This is due to insufficient action to date and currently targeted to 2030. Now the path to limiting warming to 1.5°C by the end of the century includes a temporary overshoot reaching medium (1.7°C) or even high (1.8°C) warming, before bringing temperatures back down.

Still, 1.5°C remains the enduring goal guiding global 'best efforts', as reaffirmed by the International Court of Justice. To limit warming, long-term targets are essential.

Beyond initiating the era of declining global emissions, the 2035 NDCs are a crucial milestone for turning long-term targets into reality. These NDCs must be aligned with each country's pathway toward its long-term or net-zero greenhouse gas goal. This alignment should be the minimum test of ambition and credibility. Achieving the ambitious end of these targets and limiting warming to 1.8°C to 1.9°C will require actionable, investable plans for delivering NDCs. This requires strong domestic policy, and international trade and finance and other support to deliver all conditional elements of NDCs. This can be supported by a roadmap and delivery of global targets for changes in the physical economy aligned with limiting warming to 1.8°C at most, and closing the gap to 1.5°C, including for renewable energy, energy efficiency, and electrification.