Tracking Global Climate Engagements: A Comparative Analysis of Five Major Emitters towards 2030 Targets

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Abstract

This paper evaluates the progress of five major global emitters (China, India, the United States, Canada, and France) towards their 2030 climate commitments. Utilising variables from the Our World in Data (OWID) dataset against their respective targets pulled from climateactiontracker.org and enerdata (for France), we analyse the trajectories of intensity-based targets in emerging economies against absolute greenhouse gas (GHG) reduction targets in developed nations. China and India prioritise the decoupling of CO_2 from GDP growth, while the US and Canada face the challenge of meeting absolute reductions of 50-52% and 40-45% respectively relative to 2005 baselines. Furthermore, we examine the structural nuances of France's National Low Carbon Strategy (SNBC) which serves as a domestic roadmap within the collective European Union NDC. By quantifying the "gap" between the current historical data and 2030 intercepts, this study provides a visual and analytical benchmark for assessing whether current policy trajectories respect international engagements or if they risk exceeding critical carbon thresholds.

1 Introduction

The Nationally Determined Contributions (NDCs) established under the Paris Agreement serve as the primary benchmarks for global climate action. The first round of NDCs was submitted in 2015. A second round took place in 2020/2021 while the third round was due in 2025. 130 countries amounting to 78% of world emissions already submitted their NDC 3.0 while 67 (22% of emissions) have not yet updated their own[1]. The NDCs set longterm targets for 2035 and include a 2030 checkpoint to assess progress. Therefore, as we approach the 2030 deadline, evaluating whether major emitters are "on track" requires a nuanced understanding of how different nations may define success. This paper thus analyses five key economies: China, India, the United States, Canada, and France. We use a comprehensive dataset from Our World in Data (OWID) to determine if current trajectories align with international and domestic engagements.

[1] *Climate Watch*. "Nationally Determined Contributions (NDC) Tracker." World Resources Institute. Accessed January 15, 2026. https://www.climatewatchdata.org/ndc-tracker.

2 Methods

We rely on a primary dataset sourced from Our World in Data which provides standardised annual metrics for carbon dioxide and other greenhouse gases[2]. Data range from 1750 to 2024. To ensure a fair evaluation of climate engagements, we used the following variables:

- Absolute targets: `total_ghg_excluding_lucf`[3] is used for the US, Canada, and France to focus on industrial and energy emissions while excluding the volatility of land-use changes.

- Intensity targets: `co2_per_gdp` is used for China and India to track the decoupling of emissions from economic growth. OWID constructed this variable based on `gdp`[4] and `co2`.

- Peaking analysis: `co2`[5] values are used to identify the historical peak year for China's emissions.

For the targets, we take the NDCs of India, China, the United States, and Canada as they are reported by Climate Action Tracker[6]. Since France is not required to submit a NDC (the European Union submits a single NDC which is redistributed internally amongst member states), it follows the National Low Carbon Strategy (SNBC for *Stratégie nationale bas-carbone*). Enerdata provides the information that we need[7].

The 2030 target intercepts were calculated using different methods for each case:

- Intensity reductions: For China and India, the reduction percentage is calculated relatively to a 2005 baseline using the formula: $\text{Reduction } \% = \left(1 - \frac{\text{Current Intensity}}{\text{2005 Intensity}}\right) \times 100$.

- Absolute targets:

  US and Canada: Targets are computed as a percentage reduction (e.g., 50-52% or 40-45%) relative to 2005 GHG levels.

  France: The target is calculated as a 50% reduction relatively to a 1990 baseline, consistently with the SNBC roadmap.

- Gap analysis: The analysis uses a `max(year)` filter to compare the most recent data point against the 2030 horizontal dashed lines (the targets) to determine "on-track" status.

While OWID allows for a full evaluation of core emissions targets, it lacks electricity capacity mix data which compels us to note but not model secondary structural targets such as India's

[2] Hannah Ritchie et al., "CO_2 and Greenhouse Gas Emissions," *Our World in Data*, accessed January 15, 2026, https://ourworldindata.org/co2-and-greenhouse-gas-emissions.

[3] Gütschow, Johannes, et al. "PRIMAP-hist National Historical Emissions." Potsdam Institute for Climate Impact Research, 2023.

[4] Jutta Bolt and Jan Luiten van Zanden, "The Maddison Project: Collaborative Research on Historical National Accounts," *The Economic History Review* 67, no. 3 (2014): 627651.

[5] Global Carbon Project, *Global Carbon Budget 2023* (2023).

[6] *Climate Action Tracker*, "Countries," accessed January 14, 2026, https://climateactiontracker.org/countries/.

[7] *Enerdata*, "France's LowCarbon Strategy Targets 50% Gross GHG Emissions Cut by 2030," December 16, 2025, https://www.enerdata.net/publications/daily-energy-news/frances-low-carbon-strategy-targets-50-gross-ghg-emissions-cut-2030.html.

50% non-fossil capacity goal. Another issue pertains to the US NDC. The data shared by Climate Action Tracker is that submitted in 2024 by the Biden Administration. Since then, the Trump Administration has withdrawn the US from the Paris Agreement, voiding the NDC set under President Joe Biden[8].

Country	Metric Type	Baseline Year	Primary Variable
China	Intensity + Peak	2005	`co2_per_gdp`, `co2`
India	Intensity	2005	`co2_per_gdp`
US	Absolute GHG	2005	`total_ghg_excluding_lucf`
Canada	Absolute GHG	2005	`total_ghg_excluding_lucf`
France	Absolute GHG	1990	`total_ghg_excluding_lucf`

Table 1: Summary of Methods

[8]Jonathan D. Haskett, *U.S. Withdrawal from the Paris Agreement: Process and Potential Effects*, Congressional Research Service, R48504, April 14, 2025, `https://www.congress.gov/crs-product/R48504`.

3 Results & Analysis

3.1 Intensity-based mitigation (China and India)

China and India show progress in decoupling economic growth from carbon output. However, their absolute emission volumes keep on increasing.

China's climate strategy is a double approach that balances rapid economic growth with aggressive carbon decoupling in order to focus both on CO_2 intensity and the peaking of absolute emissions. Its primary NDC commitment is to reduce its carbon intensity (emissions per unit of GDP) by more than 65% relative to a 2005 baseline. Utilising the `co2_per_gdp` variable from the sources, we track this progress through a goldenrod trajectory that measures how closely the economy is moving towards the 65% dashed red target line (the 2030 NDC).

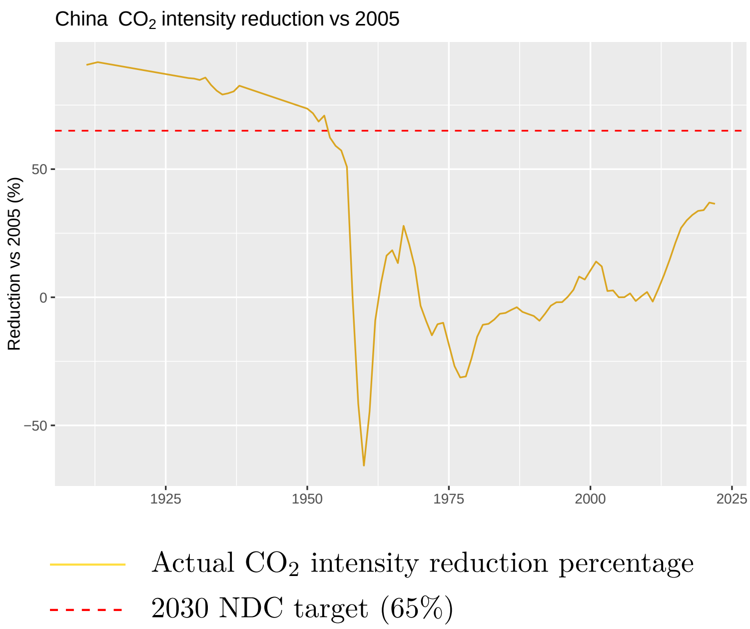


Figure 1: Progress of China's CO_2 intensity reduction relative to the 2005 baseline

We see that after suddenly plummeting right after the 1950s. Mao Zedong introduced a "Five Year Plan" in 1953 to start off the Chinese industrialisation, which may explain this decrease in intensity reduction. However, we can also notice that from the early 2000s onwards, the "goldenrod" line trends upwards around 2010–2015. This means that China has made important strides in order to reduce CO_2 intensity since 2005.

Despite this seemingly ecological trend for China, the absolute emissions (Gt) analysis is critical in order to determine whether China will respect its pledge to peak emissions before 2030.

The chart shows that China's CO_2 emissions remained extremely low and stable from 1850 until the mid-20th century, the time when the Communist regime launched the industrialisation of the nation. Then, we see that starting from the 1950s, emissions rise gradually before marking a steep acceleration after 2000. As a reminder, China accessed the World Trade Organization (WTO) in 2001, signalling its transformation into a global manufacturing powerhouse.

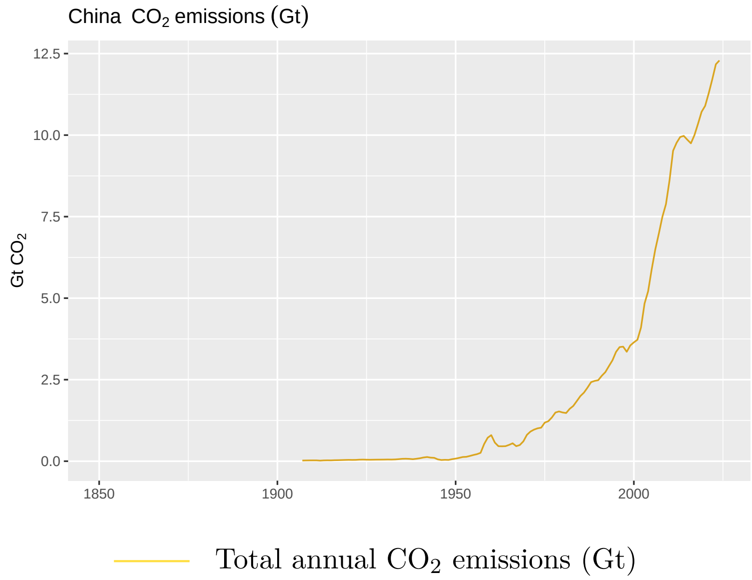


Figure 2: China's total absolute CO_2 emissions measured in Gigatonnes. This trajectory is used to identify the peak emission year, as China has committed to peaking absolute emissions before 230.

Emissions reached over 12 Gt in 2024. Nevertheless, we can see that in the most recent years since around 2020, the rise has slowed down. This can be explained by two different reasons. The first, a structural one, pertains to the nature of China's technological changes such as the progress in producing renewable energies (China installs more renewable energy capacity than any other country[9]) or selling electric vehicles (almost one in two new cars sold in China is electric in 2024[10]. The second is the Covid-19 pandemic that hit economies and slowed down GDP as well as emissions.

Although the chart shows that recently emissions have been slowing down, there is no plateau that could indicate that China's emissions have already peaked. This suggests that they are still increasing nowadays and that it will be a real challenge for China to curve down its emissions in 5 years.

India's trajectory is measured against a 45% intensity reduction target for 2030. The current data reflects the nation's effort to suppress the carbon intensity of its rapid GDP growth relative to its 2005 baseline.

Much like for China, the high numbers until the late 19th century are an artefact from the pre-heavy industrialisation era of India. Post-independence, India adopted the Industrial Policy Resolution (1948) and later a series of three Five Year Plans (1954 to 1966). This explains why the CO_2 intensity reduction decreases sharply from around the 1950s. The country built coal plants and expanded manufacturing, thus the amount of CO_2 produced per unit of GDP skyrocketed. But the chart shows that around 2000 and the 2005 baseline, the trend shifts

[9] Ma Li and Charles Bourgault, *"How China Adds More Renewable Energy Than Any Other Economy"*, *World Economic Forum*, December 3, 2025, https://www.weforum.org/stories/2025/12/china-adding-more-renewables-to-grid/.

[10] Hannah Ritchie, "Tracking Global Data on Electric Vehicles", *Our World in Data*, 2024, archived December 8, 2025, https://archive.ourworldindata.org/20251208-170037/electric-car-sales.html.

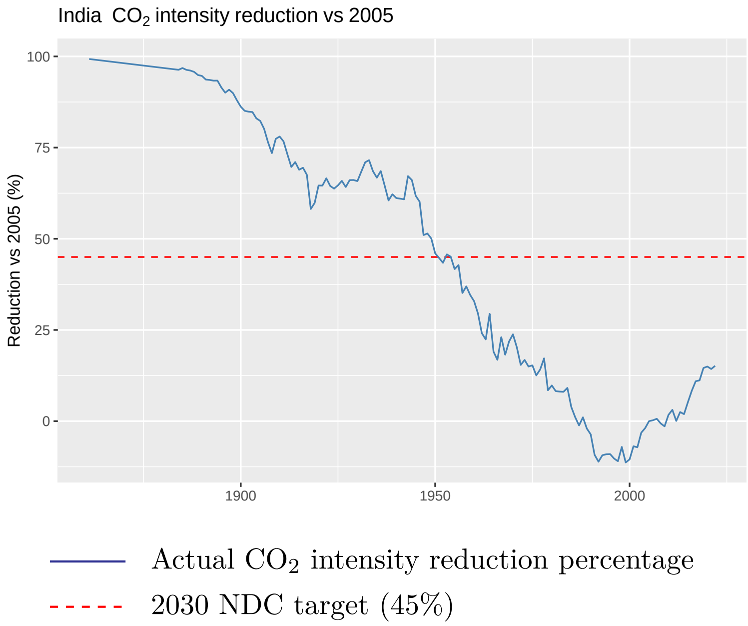
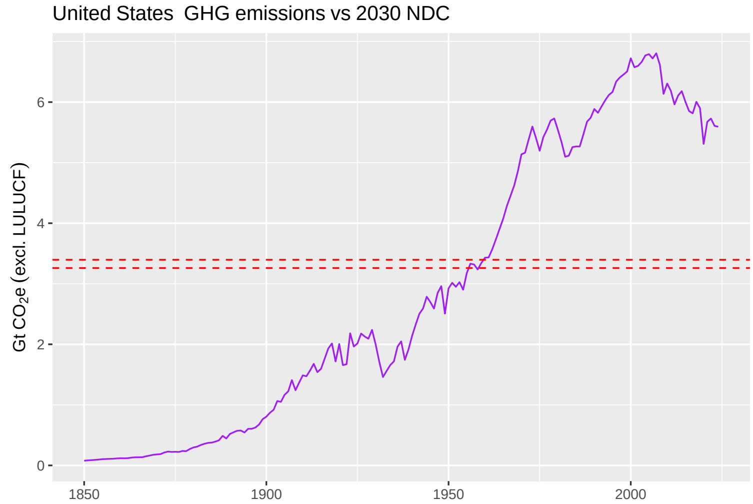


Figure 3: India's CO_2 intensity reduction trajectory relative to 2005. The chart evaluates the progress towards India's updated 2030 NDC target of a 45% reduction in emissions intensity.

upwards. It reaches around 15% at the end of the data range i.e., 2024. This rise can be attributed to a surge in renewable energy production (National Solar Mission in 2010) and a structural shift of the economy from heavy manufacturing towards IT, software, and services which are less energy-consuming. Despite this turn, India appears to still be far from its target of a 45% intensity reduction, sitting at 25-30%pt below the objective.

3.2 Absolute Abatement Trends (US, Canada, and France)

The US NDC of 2024 chose a corridor of 50-52% reduction of absolute GHG emissions against a 2005 baseline. We can see that emissions remained quite low during the 19th century but began a steady climb during the Industrial Revolution. Then, there is a dramatic spike that starts around 1950 which reflects the rapid industrial expansion and the increased energy consumption to sustain both the industry and the way of life. US emission peaked in the mid-2000s at almost 7GtCO_2e. Since then, there is a visible downwards trend although the emissions remain much higher than they were in the mid-20th century. Looking at the two 2030 NDC targets, they sit approximately at 3.3 to 3.5GTCO_2e. However, while emissions were declining recently, the graph shows that a much steeper rate of decline is required over the next few years in order to reach the 2030 targets. Indeed, the US needs to cut its current emissions by almost half of its total in the next 5 years to stay on track with these commitments.

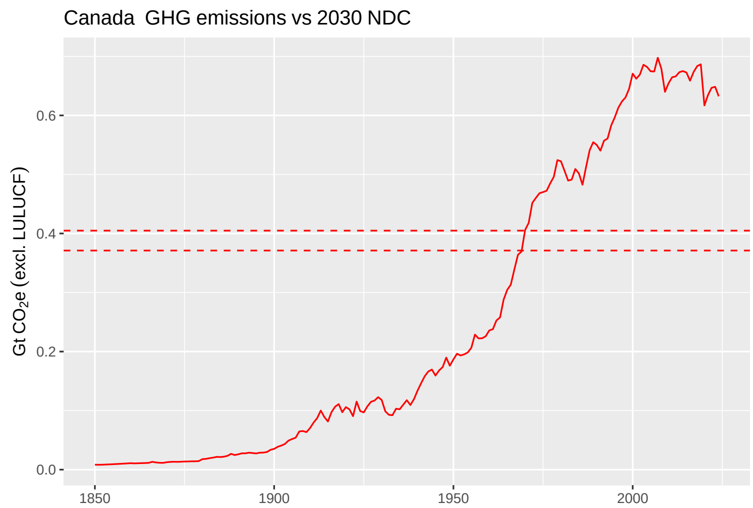


Actual annual GHG emissions ($GtCO_2e$)

2030 NDC targets (50% and 52% reduction marks)

Figure 4: United States annual GHG emissions (excluding LULUCF) in $GtCO_2e$. The trajectory is compared against the 2030 NDC target corridor of 50–52% below 2005 levels.

Canada's targets are set between 40 and 45% reduction compared to 2005. Emissions seemed to have peaked around the mid-2000s as well. After that, the emissions dipped slightly but still remain high above the 2030 NDC targets. There is no sharp decrease, it goes down steadily. This means that in 5 years, Canada must reduce its emissions to levels of the early 1970s.



Actual annual GHG emissions ($GtCO_2e$)

2030 NDC targets (40% and 45% reduction marks)

Figure 5: Canada's annual GHG emissions (excluding LULUCF) in $GtCO_2e$. The trajectory is compared against the 2030 NDC target corridor of 40-45% below 2005 levels.

On the other hand, the graph for France tells a different story compared to the US and Canada. While those countries saw their emissions continue to rise or remain at high levels even into the 2000s, France's emissions peaked decades earlier. Its emissions peaked around the early 1970s, coinciding with the first global oil shock. Just after the crisis, France started implementing the Messmer Plan (1974) in order to build a true capacity of nuclear power generation to reduce dependence on foreign oil. This allowed France to "decouple" its economic growth from its carbon emissions much earlier than other developed nations. Therefore, since the late 1970s, France's emissions have been on a steady downwards trajectory. The latest data on the graph shows that emissions were more than 30% below 1990 levels. And it seems that France is "more" on track to meet its target than its American counterparts. Nonetheless, significant acceleration is required to completely fulfil the commitment.

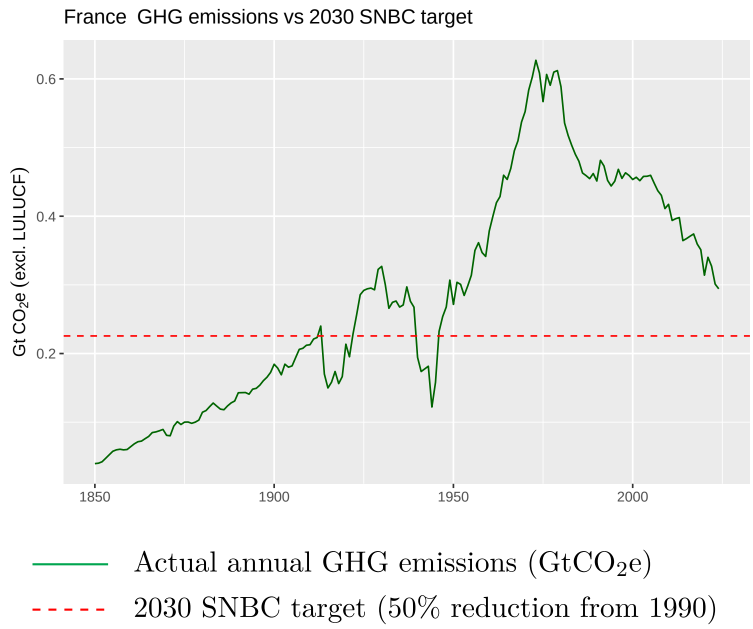


Figure 6: France's annual GHG emissions (excluding LULUCF) in GtCO_2e. Progress is measured against the National Low Carbon Strategy (SNBC) target of a 50% reduction relative to a 1990 baseline.

4 Discussion

The results presented above reveal a clear divergence in climate trajectories between established industrial powers and emerging economies. This section synthesises these findings to assess the feasibility of global climate commitments and the structural challenges inherent in different mitigation strategies.

4.1 The 2030 "Ambition Gap" and the Steepness of the Curve

One common element between the three absolute abatement charts (Figures 4, 5, and 6) is the visual disconnect between current trends and the 2030 targets. For the US and Canada, meeting their respective corridor would mean decarbonising over the next five years at a rate they have never seen in their historical data. While both nations successfully peaked their emissions in 2005, the subsequent decline has been mainly driven by the "easy wins" of the energy transition such as the shift from coal to natural gas in the power sector. To hit the 2030 targets, they need to tackle the "hard-to-abate" sectors. Think heavy industry or residential heating for instance. The graph for Canada (Figure 5) is especially striking: the stagnation in emissions tends to suggest that industrial growth is currently offsetting efficiency gains elsewhere.

4.2 Intensity-based vs Absolute Targets

The analysis of China and India (Figures 1 and 3) shows the limitations of intensity-based targets. Indeed, while both nations are making significant progress in decoupling (meaning here that they are becoming more carbon-efficient per dollar of GDP), their absolute emissions continue to rise due to the sheer scale of their economic expansion. China's trajectory seems to have reached a sort of "plateau" effect rather than a sharp peak. For China to meet its commitments of peaking before 2030, the structural shift towards renewables and EVs must be faster than the energy demands of its manufacturing base. India's situation is even more critical since it sits well below its 45% intensity reduction target. The data suggests that India's period of absolute emission growth may extend beyond that of China, which would also reflect its later start in the industrialisation cycle.

4.3 The Historical Blueprint: Lessons from France

France (Figure 6) provides the only historical precedent for a rapid policy-driven decoupling of emissions from GDP. The Messmer Plan of the 1970s offers a compelling case study in how a centralised state can pivot its entire energy infrastructure in a single decade. Nevertheless, France's current challenge is fundamentally different from that of the 1970s. Indeed, since it has already decarbonised its electricity grid, France cannot rely on the "easy wins" as the others can. Its progress towards the 2030 SNBC target will depend on behavioural changes and deep technological shifts in certain sectors such as transportation. Thus, this suggests that even for the most "advanced" decarbonisers, the final 50% of the journey is much more difficult than the first.

4.4 The 2035 Horizon: A Shift in Realisability?

As the global community moves past the initial 2030 deadline, attention has shifted to the 2035 NDC targets submitted in late 2025. These targets are often viewed as more "realisable" because they align with longer-term investment cycles in heavy industry and infrastructure.

For the nations analysed, the 2035 commitments represent a significant evolution:

- **United States:** Despite political shifts, the announced 2035 target of a 61–66% reduction from 2005 levels moves beyond the power-sector transition into the total electrification of the economy.
- **Canada:** Canada has set a 2035 target of 45–50% below 2005. Interestingly, this is only a marginal 5% increase from its 2030 upper bound, suggesting a strategy of "attainable consistency" over high-risk ambition.
- **France (EU):** The EU's 2035 target of approximately 70% reduction (from 1990) serves as a bridge to its 90% goal for 2040, banking on the total phase-out of internal combustion engines by 2035.
- **China:** Crucially, China's 2035 NDC marks its first shift to an absolute reduction target (7–10% below peak levels), signalling that the "intensity-only" era has officially ended.
- **India:** India continues to focus on tripling renewable capacity, but its 2035 outlook remains tied to the 2070 Net Zero goal, prioritising development alongside gradual abatement.

Ultimately, while the 2035 targets provide a more realistic time-frame for deep technological shifts (like green hydrogen or carbon capture), they also carry a risk of "procrastinated ambition." The data suggests that if the 2030 targets are not met, the 2035 goals, while appearing more realisable on paper, will require a level of economic transformation that currently lacks sufficient policy backing.

5 Conclusion

This analysis of greenhouse gas trajectories across five major economies highlights a real challenge for global climate governance. While the "decoupling" of economic growth from carbon emissions is a reality in both intensity-based and absolute-abatement regimes, the current pace of progress remains insufficient to meet 2030 commitments.

The United States and Canada face a "steepness problem" where the required rate of decline over the next five years must nearly triple their historical performance. Meanwhile, the emerging economies of China and India demonstrate that efficiency gains (intensity reduction) are currently being swallowed by the sheer scale of industrial expansion. France's unique historical trajectory reminds us that rapid decarbonisation is possible through massive state-led infrastructure shifts but a "plateau" remains when the need to face harder-to-abate sectors arise.

In the end, the 2030 targets appear less like a natural progression of current trends and more like a radical "pivot point" that has yet to be fully realised in the data. For the Paris Agreement goals to remain within reach, the coming five years must represent a structural break from the historical trajectories identified in this study.

6 References

Bolt, Jutta, and Jan Luiten van Zanden. “The Maddison Project: Collaborative Research on Historical National Accounts.” The Economic History Review 67, no. 3 (2014): 627651.

Climate Action Tracker. “Countries.” Accessed January 14, 2026. https://climateactiontracker.org/countries/.

Climate Watch. “Nationally Determined Contributions (NDC) Tracker.” World Resources Institute. Accessed January 15, 2026. https://www.climatewatchdata.org/ndc-tracker.

Enerdata. “France’s LowCarbon Strategy Targets 50% Gross GHG Emissions Cut by 2030.” December 16, 2025. https://www.enerdata.net/publications/daily-energy-news/frances-low-carbon-strategy-targets-50-gross-ghg-emissions-cut-2030.html.

Global Carbon Project. Global Carbon Budget 2023. 2023.

Gütschow, Johannes, et al. “PRIMAP-hist National Historical Emissions.” Potsdam Institute for Climate Impact Research, 2023.

Haskett, Jonathan D. *U.S. Withdrawal from the Paris Agreement: Process and Potential Effects.* Congressional Research Service. R48504. April 14, 2025. https://www.congress.gov/crs-product/R48504 .

Li, Ma, and Charles Bourgault. *“How China Adds More Renewable Energy Than Any Other Economy”. World Economic Forum.* December 3, 2025. https://www.weforum.org/stories/2025/12/china-adding-more-renewables-to-grid/.

Ritchie, Hannah. “Tracking Global Data on Electric Vehicles”. *Our World in Data*, 2024. Archived December 8, 2025. https://archive.ourworldindata.org/20251208-170037/electric-car-sales.html.

Ritchie, Hannah, Max Roser, Pablo Rosado, and Our World in Data. “CO_2 and Greenhouse Gas Emissions.” Our World in Data. Accessed January 15, 2026. https://ourworldindata.org/co2-and-greenhouse-gas-emissions.