

## Sorting Fact From Fiction: A Look at the Data on Key Climate-Related Topics

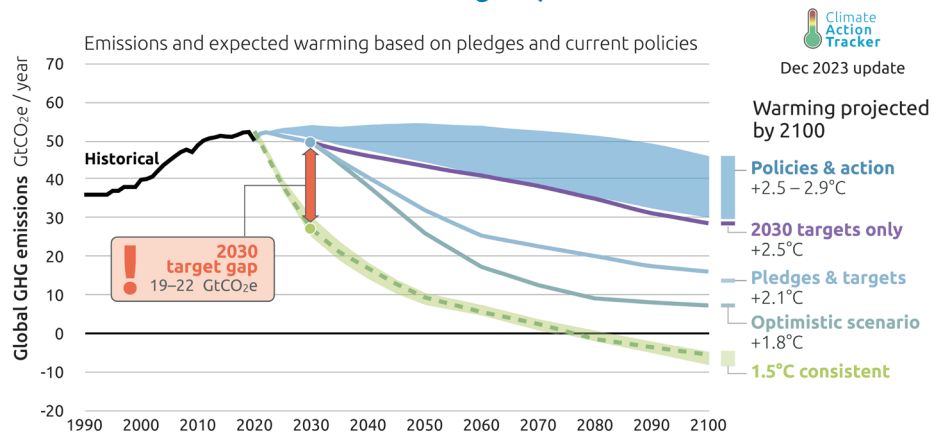
Amid the warmest 12-month span ever recorded, and years after the landmark Paris Agreement aimed at curbing global warming, there is considerable uncertainty about the present status of climate change and whether we are making progress to decarbonize the global economy. In the Q&A that follows, the TCW Sustainable Investment Group provides a stock-taking of the latest facts and figures for several key questions.

### Are we on track to achieve the Paris Agreement’s goal to limit temperature rise to 1.5-2°C above pre-industrial levels?

**No.** The 2023 results of the UN’s Global Stocktake, which assessed global progress against commitments\*, found that although greenhouse gas (GHG) emissions are growing at a slower pace than projected in 2015, the world is not yet on track to meet the long-term goals of the Paris Agreement.

At the time of signing, global GHG emissions were projected to increase 16% by 2030. This projected increase has now fallen to 3%<sup>1</sup>, a trajectory that will lead to a projected 2.5-2.9°C of warming by 2100<sup>2</sup>. In contrast, GHG emissions must fall 28% by 2030, compared to the 2015 baseline, for the world to align with the 2°C pathway and 42% to align with the 1.5°C pathway<sup>3</sup>.

### 2100 Warming Projections



Source: Climate Action Tracker

\* The UN Global Stocktake is a process established under the Paris Agreement to periodically assess collective progress toward achieving the goals of the agreement, which include limiting global temperature rise to well below 2° Celsius above pre-industrial levels and pursuing efforts to limit the increase to 1.5° Celsius. It is a comprehensive assessment of the implementation of the Paris Agreement and is meant to inform Parties to the agreement on the overall effect of their nationally determined contributions (NDCs) towards the global climate goals.

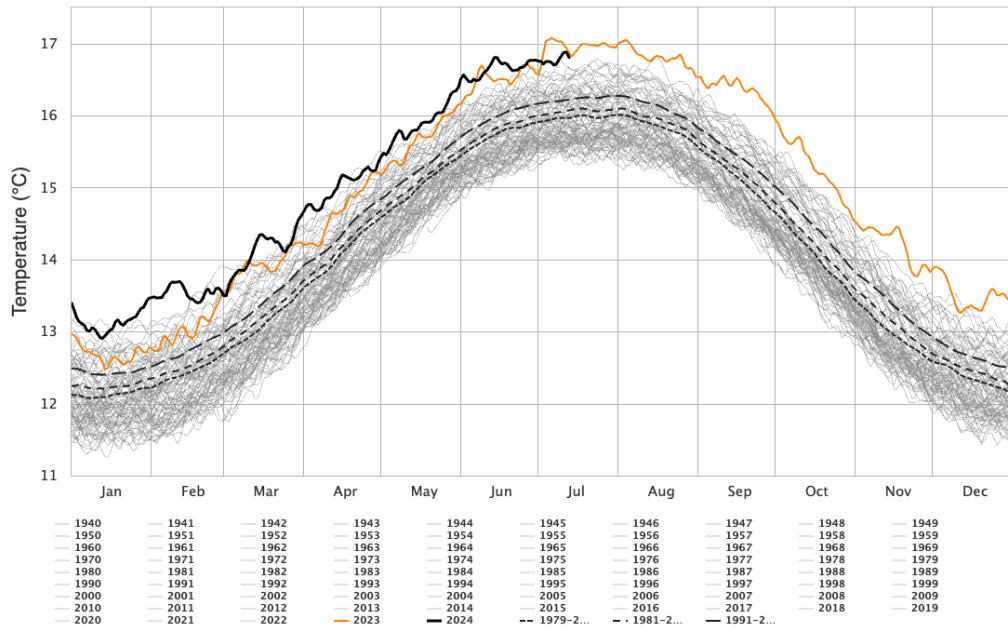
**Have we already breached the 1.5°C threshold?**

**Not yet.** It is true that June 2024 was the 12<sup>th</sup> consecutive month to reach or cross the 1.5°C threshold, capping off the hottest 12-month period on record, with an average temperature of 1.64°C above pre-industrial levels. However, temperatures for any single month or year can fluctuate due to natural variability, temporary weather effects, and anomalies, such as the 2023-24 El Niño event, which contributed to the recent temperature rise by releasing ocean heat into the atmosphere. The Paris Agreement’s goals therefore refer to long-term temperature increases measured over decades.

Nevertheless, even temporary breaches of the 1.5°C threshold should serve as early signs of what might await us in the future.

**Daily Surface Air Temperature, World (90°S–90°N, 0–360°E)**

Dataset: ECMWF Reanalysis v5 (ERA 5) downloaded from C3S | Image Credit: ClimateReanalyzer.org, Climate Change Institute, University of Maine



Source: Climate Change Institute - University of Maine, European Centre for Medium-Range Weather Forecasts

The 195 signatories are required to analyze the results of the UN Global Stocktake and present the next iteration of their climate action plans at the 30<sup>th</sup> Conference of the Parties (COP 30) in 2025. With over 64 countries holding their elections in 2024 (representing half the world’s population and half of its GHG emissions), climate change policy and investment is sure to be a hot topic of contention<sup>4</sup>.

**Is the energy transition underway?**

**It’s complicated.** On the one hand, the world invests nearly twice as much in clean energy as it does in fossil fuels<sup>5</sup>, and renewable energy is becoming increasingly cost-competitive. Utility-scale solar and on-shore wind energy are now 83% and 65% cheaper to produce, respectively, compared to 2009<sup>6</sup>, and renewable energy and nuclear energy consumption reached ~115 exajoules in 2023, a new record<sup>7</sup>.

On the other hand, global energy consumption also touched record highs<sup>7</sup>, driven by population growth, increased demand from AI and data center deployment, electrification, reindustrialization, onshoring, and the rise of the middle class in developing economies. As a result, fossil fuel consumption and carbon emissions from energy have also reached record high levels and fossil fuels continue to make up over 80% of total energy consumption<sup>7</sup>. However, with clean energy generation growing at a comparatively faster pace, the share of fossil fuels in the global energy mix will continue to decrease and is expected to peak by or before 2030.

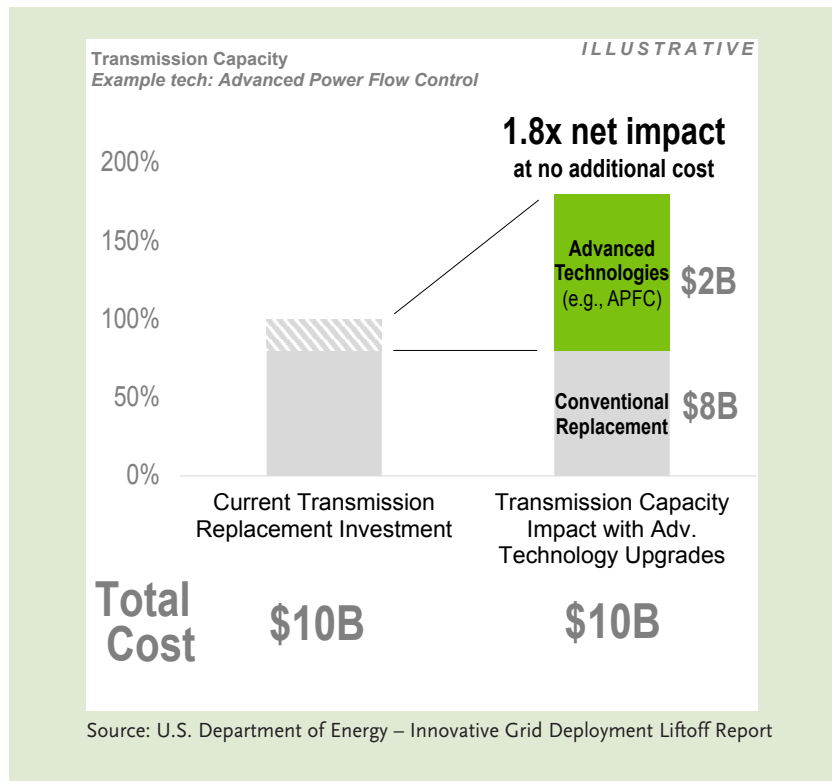
To meet this growing energy demand, not only is it necessary to scale-up clean energy production and new grid capacity, it is also essential to improve the energy efficiency of existing grid infrastructure in the transmission and distribution functions. The U.S. Department of Energy estimates that deploying advanced grid solutions available today can cost-effectively increase the capacity of the existing grid to support 20-100GW of incremental peak demand<sup>8</sup>.

Additionally, any efficiency improvements achieved must also be accompanied by policy support to promote a culture of energy conservation to avoid the Jevons paradox, an effect where the increase in efficiency and decrease in price of a resource causes demand to grow so much that it causes a net increase in consumption instead of the desired decrease.

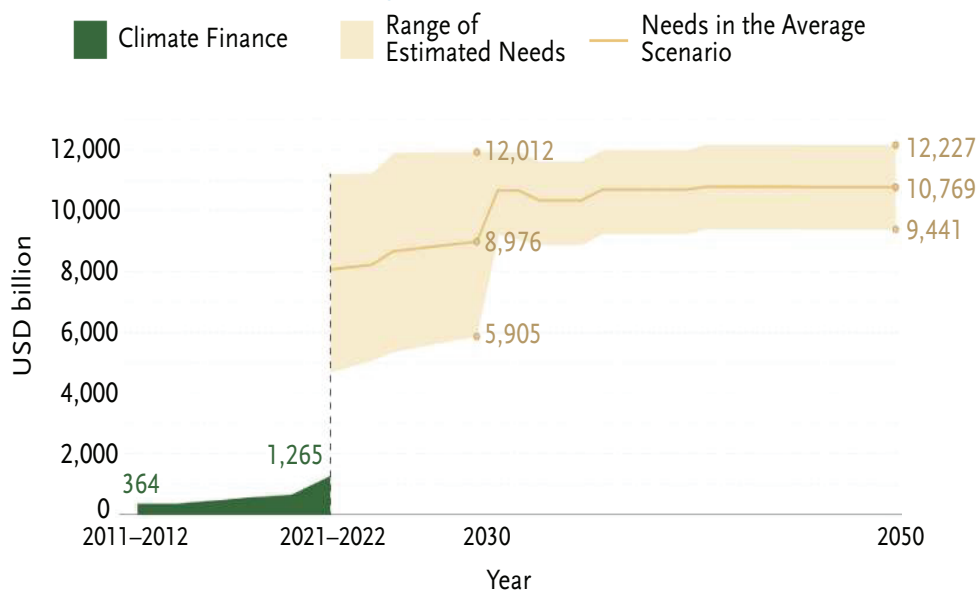
The world's pursuit of the 1.5°C goal will require massive investment in clean energy and the decarbonization of high-emission industries. It

is estimated that annual climate finance spending needs to grow 6x from 2022 levels to ~\$9 trillion by 2030 and ~\$11 trillion through 2050. The costs of inaction (economic costs - direct impact on physical assets and GDP; and social costs – impact on health, nature, migration, etc.) are estimated to be far higher, reaching \$1,266 trillion by 2100<sup>9</sup>.

Since 2010, when global climate finance tracking began, the world has cumulatively spent an estimated \$7.4 trillion on clean energy and decarbonization, with 2022's outlay of \$1.3 trillion representing only 1% of global GDP<sup>10</sup>.



**Global Tracked Climate Finance and Average Estimated Annual Needs from 2011–2012 through 2050**



Source: Climate Policy Initiative (CPI)

**Are global sales of Electric Vehicles (EVs) declining?**

**No.** The uptake of new technologies often does not happen in a straight line. The same can be said of the uptake of EV adoption. In 2023, global passenger EV sales grew 34% to 13.9 million, a relative slowdown compared to the 60% growth in sales one year earlier. The 2023 slowdown in growth has continued in 2024 and is very real, however sales of EVs continue to rise globally. According to BloombergNEF estimates, which are based on current techno-economic trends and assume no new policy intervention, passenger EV sales are set to rise from 13.9 million in 2023 to over 30 million in 2027, representing an average of 21% per year versus the average of 61% between 2020 and 2023<sup>11</sup>.

In the U.S., the overall flat sales in Q1 2024 were primarily driven by Tesla’s 13.3% year-over-year (YoY) sales decline. In fact, excluding Tesla, sales grew 13%, with the other top 10 U.S. players experiencing a 42% growth in EV sales, on average<sup>12</sup>.

While some automakers have pared back production estimates, others have not.

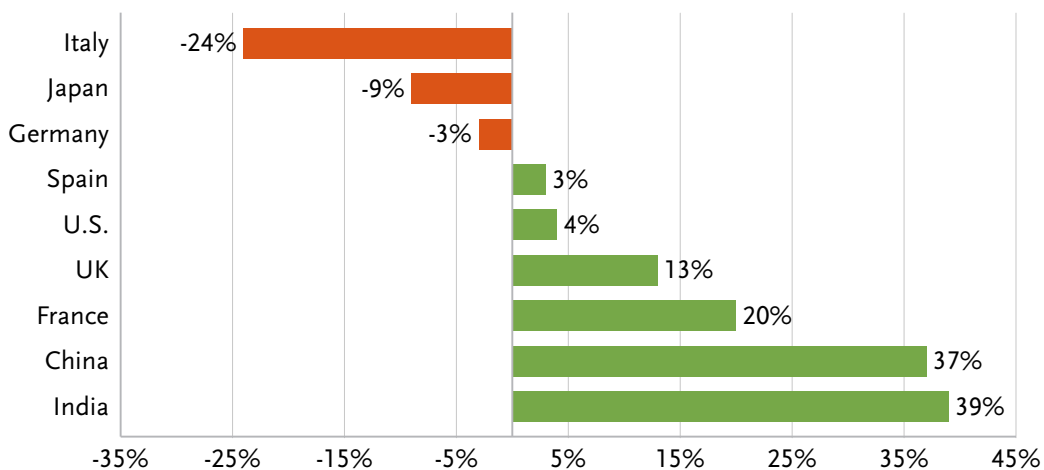
Several automakers –Tesla, Mercedes-Benz, General Motors, and Ford – have made cuts to their near-term goals for electric vehicles, quoting their inability to manufacture EVs at as low a cost as internal-combustion cars. This is not broadly representative. Kia held to its target of 37% of its sales by 2030 and is launching an affordable all-electric SUV this year. Volvo has seen sales increase 53% YoY. Chinese automakers are going full steam ahead to take over global market share in the auto market.

Of the automakers who have pulled back, GM CFO Paul Jacobson said in June that “the company is still bullish on EVs and has had success with its EV rollout ... GM expects to produce 200,000 to 250,000 EVs this year, slightly lower than the 200,000 to 300,000 it had previously expected.” But he expects the EVs to be “variable profit positive,” meaning GM can “sell it for more than the cost of the materials and start to offset all of our fixed costs.” He added that GM can reach variable profit in its entire EV fleet by the end of this year, with EBIT (earnings before interest, expense, and taxes) profitability coming in 2025. Jacobson added GM’s EV growth rate was actually “outpacing everybody.”

However, looking at the U.S. market in isolation does not give you the full picture. U.S. numbers alone mask significant differences in EV uptake across geographies and market segments. While sales growth has declined in the U.S., global passenger EV adoption and penetration continues to grow as expected, with market share expected to cross 30% in the next few years.

Not all geographies have experienced growth, with delays in Italy’s EV subsidy purchase program, expiration of subsidies in Germany, and a sector-wide safety test scandal in Japan plaguing sales.

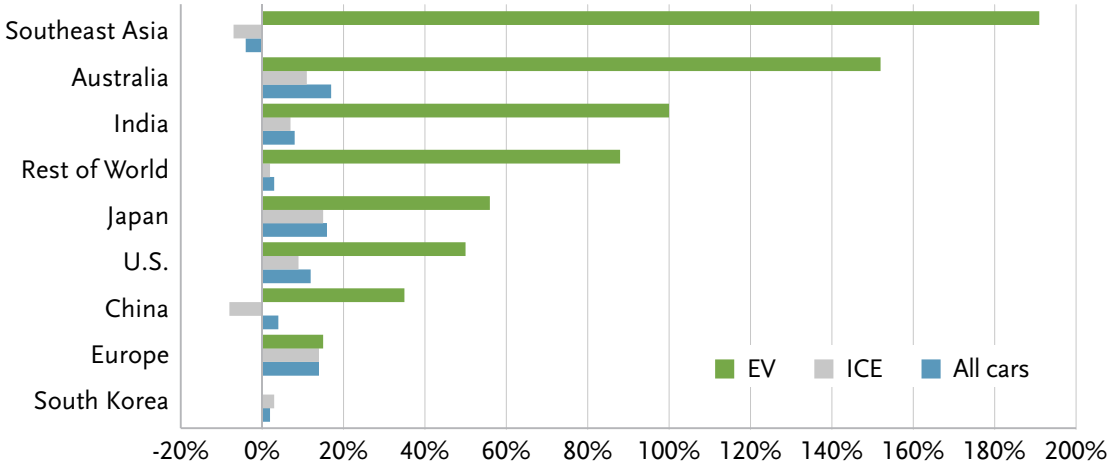
**Passenger EV Sales Year-on-Year Change in Select Countries, 1Q 2024**



Source: BloombergNEF, MarkLines, Jato Dynamics. Note: Includes battery electric vehicles and plug-in hybrids.

This reduction in sales growth is not isolated to the EV industry alone. In fact, EVs seem to be faring comparatively better than their internal combustion engine (ICE) counterparts.

**Annual Growth Rate for Passenger Vehicle Sales, 2022 to 2023**

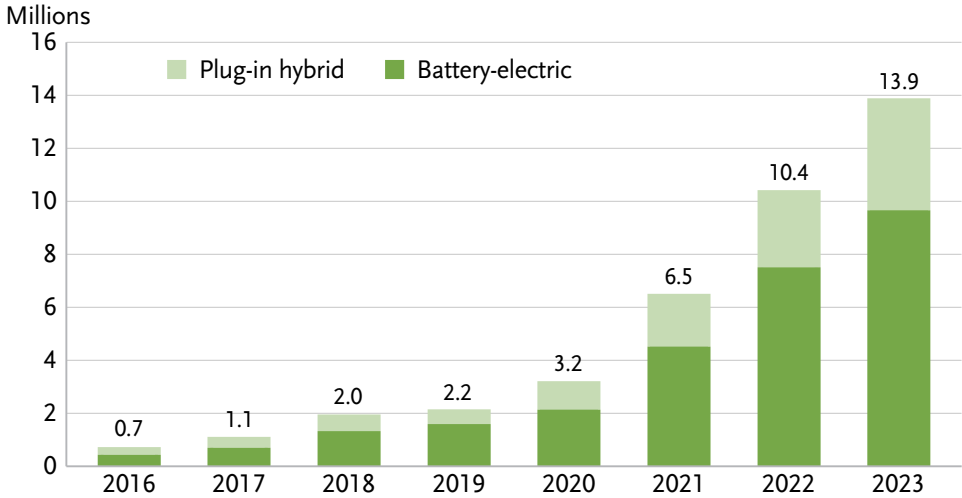


Source: BloombergNEF; Note: EV includes battery-electric and plug-in hybrid vehicles. ICE stands for internal combustion engine.

Commercial EV sales (e.g., trucks, vans, buses) are accelerating. Sales of electric light-duty delivery vans and trucks are spreading fast in China, South Korea, and several European countries, while sales in the U.S. are weak for now. Overall, this segment is projected to be close to one-third of total sales by 2030.

The outlook for plug-in hybrids also looks set to accelerate, in part due to the near-term EV market challenges with charging infrastructure and range anxiety. In 2023, in the compact-car segment – which makes up nearly a quarter of total passenger vehicles sales in China – an average fully electric car was still priced roughly 18% higher than a comparable ICE model. The price gap between an average plug-in hybrid car and a combustion car in the same segment was negligible.

**Global Passenger EV Sales by Drivetrain**



Source: BloombergNEF

As with most new technologies, there are many challenges to broader adoption and EVs are no different. Input costs driving higher overall auto costs, battery charging infrastructure, questions about policy support, etc. have been some of the drivers of both changes in consumer sentiment and a slowdown in the pace of growth of EV adoption. Below are a few current obstacles affecting sales:

**Election Year** – With several elections happening this year, consumers and manufacturers face uncertainty around government policy and support of the EV industry. The U.S. loosened its newly proposed vehicle fuel economy requirements, and the UK delayed its ICE vehicle ban timeline from 2030 to 2035.

**Insufficient Charging Infrastructure** - Concerns around driving range and limited charging infrastructure are preventing many potential consumers from pulling the trigger on EVs. Based on a Boston Consulting Group study, 38% of U.S.-based survey participants are holding out for cheaper (<\$50k), faster-charging (<20 minutes) and longer-ranged (>350 mi per charge) vehicles. The plug-in hybrid addresses some of the concerns around range and price and is growing in popularity as a bridge technology while consumers wait for EVs and charging infrastructure to become more viable. It comes as no surprise, then, that the plug-in is the fastest growing segment of passenger vehicles, with a 65% compounded annual growth rate since 2019.

**China Tariffs** – China’s surplus stockpile of cheap EVs can go a long way in enabling EVs to achieve price parity with their ICE counterparts globally, but major economies such as the U.S., EU, and India are imposing tariffs on foreign EVs to protect domestic manufacturers, reduce reliance on China for critical battery minerals, and build out their own EV supply chains.

However, costs across the board are coming down and the improving economics of electric vehicles underpin the continued long-term growth in EV adoption. The underlying technology for EVs continues to get better and cheaper, with many new, lower-cost EV models set for launch in the next few years. Some of the fastest growth rates are in emerging economies, with EV sales set to quintuple in Brazil and triple in India by 2027. ■

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Mr. Chintalapati is a Sustainable Investment Analyst. Mr. Chintalapati previously worked as an ESG Analyst at ARGA Investment Management, where he performed ESG research, stewardship, engagement, marketing and client reporting. Prior to ARGA, Mr. Chintalapati worked as a FIG Sector Analyst at Verity (UBS Investment Bank). Mr. Chintalapati holds a bachelor's degree in commerce from Loyola College, India and MBA from Duke University.

## Footnote References

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- 2 Climate Action Tracker. [Link](#)
- 3 Surface Air Temperature for June 2024. [Link](#)
- 4 2024 is a Historic Election Year; April 11, 2024. [Link](#)
- 5 IEA - World Energy Investment 2024. [Link](#)
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- 10 Climate Policy Initiative - Global Landscape of Climate Finance 2023. [Link](#)
- 11 BloombergNEF EV Outlook 2024. [Link](#)
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