INTERNATIONAL COOPERATION TO KEEP PROGRESS ON CLIMATE CHANGE WITHIN REACH

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In 2025, the global climate challenge continues unabated. During 2023–2024, the world's temperature exceeded 1.5 degrees Celsius above the preindustrial average (see Figure 1), a longstanding red line for domestic policymakers and international negotiators, enshrined in the 2015 Paris Climate Agreement, signed by 195 countries. The current trajectory cited in the 2024 UN Emissions Gap Report portends increases of 2.6–3.1 degrees C, which carry increased risk of crippling heat, biodiversity loss, and vulnerability to increasingly severe storms, among other impacts. While these impacts will vary regionally, they will occur globally. As the world looks to COP30 in Brazil in November and countries' announcements of Nationally Determined Contributions (NDCs) for 2035, there is growing recognition that global progress on implementing NDCs to date — the basis for the 2.6–3.1 degrees C projection — has been inadequate.

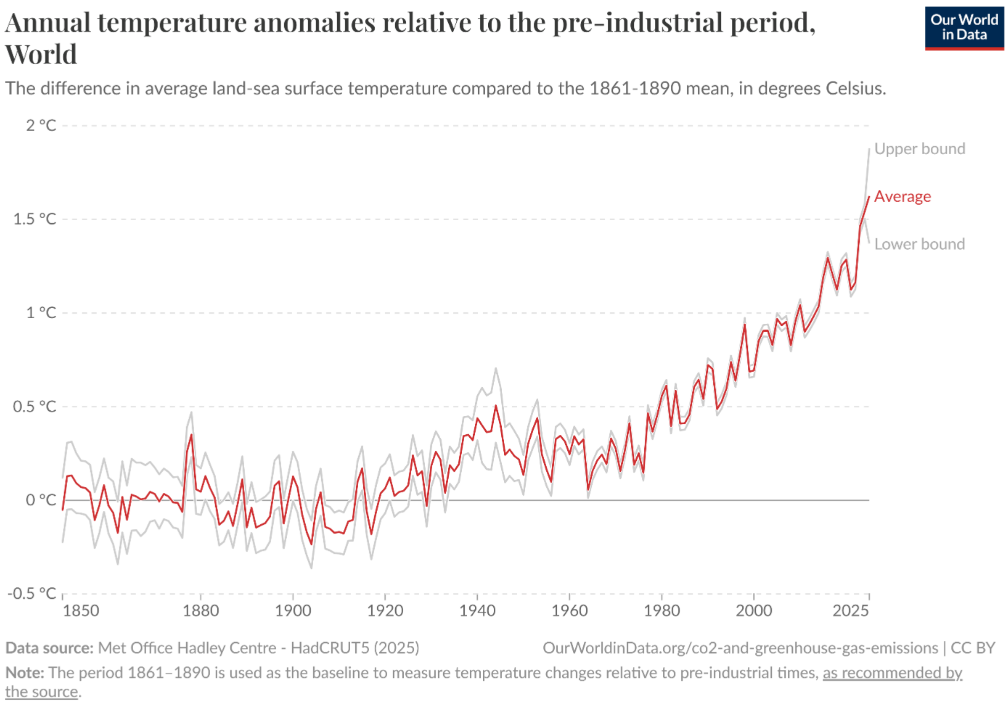


Figure 1: Annual temperature anomalies relative to the pre-industrial period.

Perhaps more ominous is the deteriorating outlook for global climate action. Around the world, governments and firms are moving more slowly to implement climate commitments or, in some cases such as the United States, are stepping back from them. One of the first actions of the incoming Trump Administration was to initiate withdrawal from the Paris Climate Agreement, although 24 U.S. states subsequently indicated intentions to support U.S. commitments. U.S. energy policy now emphasizes "energy dominance" and "extreme weather resiliency," with the future of federal support for clean energy deployment in question. While China continues to advance its 1+N policy system to achieve CO_2 neutrality by 2060 and expand its carbon market, the country also continues to build coal-fired power plants and to rely on coal for energy security.

The European Union has continued to develop its emissions trading market and carbon border adjustment mechanism. While funding for transformation in some member states, including Germany and the United Kingdom, looks likely to remain in place, other countries have struggled to maintain support among policy makers and the public. This trend extends to industries as well — in the iron and steel industry, some companies have slowed the pace of investment in deep decarbonization, in sharp contrast to aggressive expansion plans announced just a few years earlier.

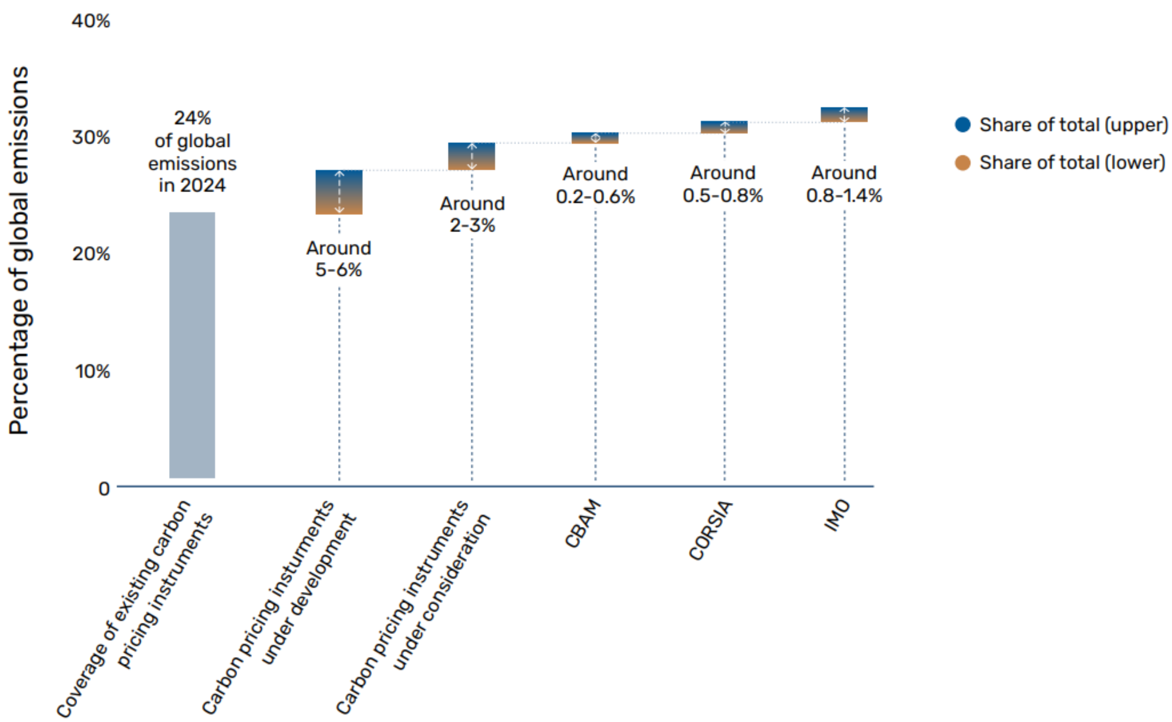
Recent developments in trade policy, while volatile and constantly evolving, further cloud the horizon for deep decarbonization. The U.S. has already rolled back many of the tariffs levied during the Trump administration's first 100 days — as of late April, 72 percent of new tariffs had been mostly or partly paused, while as of May 12, China and the U.S. agreed to pause most tariffs for 90 days, retaining only the 10 percent ad valorem rate in Executive Order 14257. With the situation very much in flux, uncertainty is leading many multinationals to rethink their global supply chains.

An accelerating wave of protectionism portends increased costs and reduced access for essential inputs to clean technologies, driving up the financial burden and economic uncertainty associated with new capital investments needed to drive the energy transition forward. Around the world, countries are taking stock of their domestic endowments of natural resources and beginning to grapple with the price of self-sufficiency. Against the backdrop of slowing momentum on climate action and rising trade tensions, the question of how to accelerate progress towards net-zero greenhouse gas (GHG) emissions by mid-century has morphed into the question of how to preserve collective progress to date. This background brief outlines possible paths to (re)gain ground.

Trade Policy: Implications for Climate Action

While climate change policy and trade policy interact, their underlying motivations are distinct. A desire to protect domestic markets has little to do with opposition to climate action, and while with unfettered trade the costs of mitigating climate change may be in the aggregate lower — and thus the pace of technology deployment faster — sustained support for a clean energy transition may be stronger when benefits accrue domestically. Keeping deep decarbonization in sight may require grappling with the reality that political support for the transition may be more durable when it delivers direct and tangible benefits to powerful domestic constituencies, even if it costs more. A recognition that all parties at the climate and trade negotiating tables must balance these tradeoffs between global economic gains and domestic political durability could shift conversations constructively. Here, it becomes important to understand how each country perceives this balance, and what room to maneuver exists to advance domestic and global climate objectives.

We should, at minimum, be aware of the climate bias of any newly proposed tariff or trade policy. Prior economic analysis has quantified the ways that prevailing trade policies favored industries with a relatively high CO_2 intensity of output. The operative question then becomes how any new tariffs implicitly reward or penalize producers of goods and services with embodied GHG emissions. The net effect of the current round of tariffs has not yet been estimated and is hard to project, in part because efforts to measure GHG emissions intensities uniformly and comprehensively at the product level are still under development. Developing this awareness at the global level will help us understand to what extent tariffs are likely to reward or discourage trade in GHG-intensive products.



The upper bounds of the estimates are presented as blurred colors. All emissions data are based on GHG emissions from the Emissions Database for Global Atmospheric Research (EDGAR version 8.0, https://edgar.jrc.ec.europa.eu/), or are from domestic inventories in the case of subnational jurisdictions. Additional information on the methodology and sources is provided in Annex B.

Figure 2: Indicative estimates of the potential GHG emissions covered by various carbon pricing instruments and international initiatives.

Carbon border adjustment mechanisms (CBAMs) can offer a promising strategy for aligning border measures with domestic GHG reduction priorities. Part of the rationale for the EU CBAM, as well as newly introduced legislation in the United States (the Foreign Pollution Fee Act) and similar proposals elsewhere, involves reshaping trade flows to penalize GHG-intensive production. Figure 2 shows how the EU CBAM is expected to expand the amount of global GHG emissions subject to carbon pricing, by extending the EU-ETS price to imports based on the GHG intensity of production. The CBAM is a powerful example of how tariffs might protect climate ambition in the EU and drive efforts beyond it, for instance, by encouraging trading partners to adopt GHG pricing.

Tariffs can also affect access to supply chains for clean technologies. With prolonged trade tensions, production of technologies aligned with deep decarbonization could stall. Substituting domestic content is often not straightforward — for example, as observed in Cheng, *et al.* (2024), most production steps in global EV battery and material supply chains are heavily concentrated in a single country, China. Recent tariffs are projected to lead to decreased production of electric vehicles in the United States, given the current dependence of U.S. auto manufacturers on material inputs produced in China. By contrast, most of China's production is consumed domestically or exported to developing countries, insulating it from trade tensions. Currently, the U.S. accounts for only 4 percent of electric vehicle and solar- and wind-power equipment exports from China.

In this more siloed world, the pace and extent of decarbonization is likely to be more of a patchwork. These effects are most likely to be felt over time, with carbon lock-in intensifying in some markets while others may see accelerated decarbonization, if domestic policy and energy and material input prices remain favorable. Prior research has found that emissions embodied in trade account for 20–25 percent of global emissions. If a country wishes to advance deep decarbonization, trade decoupling could limit access to competing imports with high embodied GHG emissions (but lower costs). However, as noted above, achieving domestic climate ambitions may also be more costly if trade is limited, prompting backlash and shifting priorities.

Beyond affecting embodied GHGs and clean energy supply chains, trade tensions and outright trade war carry broader, systemic risks. Reduced dependence among countries may reduce the mutual losses of conflict, increasing its likelihood. The associated risks should not be underestimated. Refusing the economic gains possible through comparative advantage could raise costs by an unknown magnitude, leading to inflation and instability. Reversal may not be possible. If the economic fallout is severe, political leaders may be more inclined towards narratives that mitigating climate change is a luxury. While coalitions that support action on climate change may be able to point to localized benefits from new jobs in green industries, rising costs could quickly diminish perceived benefits and stall progress.

Where might we go from here?

Against a backdrop of escalating trade tensions and signs of softening climate ambition, it is worth asking how we can make progress — or at least minimize backsliding. Here, the creation of safe spaces that create and protect favorable conditions for climate action could potentially help. These include safe spaces *in trade:* could certain key inputs to the green economy be potentially exempted from tariffs, without thwarting the ambitions of protectionist programs? For example, solar PV and wind turbine components are mature industries that benefit from production at scale.

One strategy could seek to shield products, equipment, and commodities important for decarbonization from tariffs in ways that limit collateral damage from the trade war for the climate. It would require a shared understanding of which traded goods are most essential to decarbonization, especially among trade negotiators from countries with an interest in advancing climate action. While governments may insist that some items — such as semiconductors, transformers, and EV batteries — be produced domestically, other strategies, such as incentivizing manufacturers to innovate in ways that reduce reliance on materials most exposed to supply chain disruptions, could be pursued instead. In short, governments with green ambitions should take a more surgical approach to trade policy, building in pro-climate biases whenever feasible and not at odds with security or economic priorities.

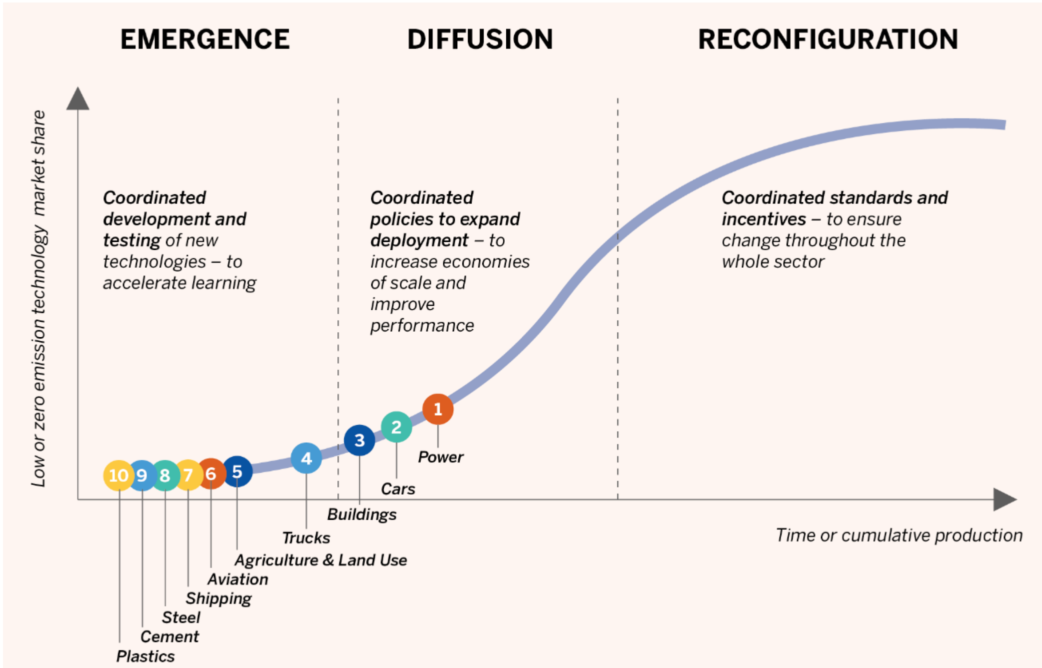


Figure 3: Progress of sectors' low carbon transitions and priorities for coordinated international action. Source: Victor, et al. (2019)

The second need is for safe spaces *for the emergence and diffusion of decarbonized energy technologies,* an idea described in Victor, *et al*. (2019) and summarized in Figure 3. Here, China's longstanding commitment to energy R&D using public funds stands out. But R&D is only part of the story. Also essential is the cultivation of test beds for demonstration at industrial scale, also known as "lighthouse projects." Taking advantage of abundant cheap hydropower in Northern Sweden, Stegra's investment in hydrogen-based iron and steelmaking is one example. Frankfurt am Main airport's efforts to introduce sustainable aviation fuels is another. Both Baosteel and HBIS Group in China have constructed hydrogen DRI production sites, advancing decarbonization of iron and steelmaking. China and the U.S. are among the top five countries in terms of the number of operational carbon capture and sequestration projects for power and industry. Many nascent solutions to mitigating or removing GHGs — especially outside of the power sector and passenger vehicles — are still in the early stages of development. Progress will require that these efforts are strongly incentivized in protected niches and then incorporated into decarbonization plans and energy and industrial systems at scale (Victor, *et al*. 2019).

The third need is for safe spaces that *support infrastructure and systems* necessary for decarbonization. These include the collection of comprehensive, comparable data on GHG emissions across industries and products, subnational policy systems and partnerships, and business networks. Substantial data collection and associated standards have been established in China to support the emissions trading system, green credit programs, and other mechanisms. A reporting platform enables a broader set of businesses to track CO_2 emissions and related indicators, establishing indicators useful to financial institutions, public procurement processes, and performance audits. Similar efforts are underway in the United States for several industries. The European Union has called for establishing the Digital Product Passport, which would track a product's impacts — including CO_2 emissions — across its supply chain. Continued support for subnational climate efforts and cross-border coalitions of stakeholders will be important to progress on climate change, perhaps especially in cases where national commitments have lapsed.

This brief concludes by offering a few ways these safe spaces might be established. First, countries with strong climate commitments can work through trade talks to shield the impact of tariffs on climate progress. These countries can further design mechanisms to reflect climate costs in the prices of traded goods, supporting domestic producers and encouraging other countries to introduce carbon pricing, while establishing strong, interoperable GHG accounting frameworks. Second, businesses can push for harmonized policy regimes within industries as well as across state and national borders that set long-term climate goals within reach for innovative producers, reducing uncertainty and rewarding early movers. Third, ongoing scholarly exchange can keep channels of communication open, build goodwill, and increase the chances of diffusing trade and geopolitical tensions in the long run.

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ABOUT THE HARVARD PROJECT ON CLIMATE AGREEMENTS

The Harvard Project on Climate Agreements is a Harvard-University-wide initiative established in 2007 to identify and advance scientifically sound, economically sensible, and politically pragmatic public policy options for addressing global climate change. Drawing upon leading thinkers from around the world, the Harvard Project conducts research on policy architecture, key design elements, and institutional dimensions of international and domestic climate-change policy. The Harvard Project is directed by Robert N. Stavins, A.J. Meyer Professor of Energy and Economic Development, Harvard Kennedy School. For more information, see the Harvard Project's website: www.hks.harvard.edu/hpca.

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