

RESEARCH ARTICLE

Contrasting stances on sustainability by the USA and China: Political economy and demographic paradoxes in the two main agents of climate change

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Abstract

As the world's preeminent greenhouse gas emitters, the United States and China are moving along increasingly divergent sustainability trajectories. Applying a political economy and demographic lens, this article contends that national emission profiles are shaped by a complex interplay of climate threat perceptions, state capacity, energy strategies and shifting attitudes toward multilateralism. While China integrates rapid renewable expansion with persistent fossil fuel reliance under a state-led developmental model, the United States has recently implemented domestic deregulation and withdrawal from international climate accords. Beyond these institutional contrasts, a paradoxical convergence in attitudes toward population growth, despite the nations' sharply different demographic trends, is identified. Overall, the analysis advances the discourse on climate inequality and the viability of collective global climate action, highlighting how demographic dynamics and political economy jointly determine the prospects for sustainability.

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1. Introduction

The global environmental crisis has entered a critical phase, characterised by what recent scholarship describes as ‘uncharted territory’ for planetary vital signs. Despite decades of diplomatic efforts, global emissions have accelerated, exacerbating a climate emergency that is no longer a future risk but a present reality (Ripple et al., 2023). Europe’s current devastating floods, heatwaves and wildfires are a stark harbinger that the climate crisis has entered a critical stage – warning of far greater disruption to come if urgent action is not taken.

Within this precarious context, the geopolitical landscape has shifted from cooperative aspirations to deepening polarisation. At the centre of this dynamic stand the United States of America and China, the world’s two largest emitters, whose domestic choices and bilateral interactions disproportionately shape the trajectory of global mitigation (Lewis, 2023; Dai et al., 2023). Their combined carbon footprint effectively dictates the upper limits of climate ambition: without their alignment, the goals of the 2015 Paris Agreement remain biophysically unattainable (UNEP, 2024).

The period following the Paris Agreement initially promised an era of coordinated leadership (‘G2’), in which Sino-American convergence would anchor a global transition away from fossil fuels. However, this optimism has eroded: we are now witnessing a fragmentation of global climate governance, driven by geoeconomic competition and the weaponisation of trade and technology policies (Bierman et al., 2022). Instead of a unified transition, the international system is fracturing into competing blocs. The persistence of fossil fuel dependence – embedded in China’s coal-heavy energy security strategy, and the United States’ continued dependence on the expansion of oil and gas production – underscores the resilience of carbon lock-in despite high-level rhetorical commitments to net-zero targets (Raimi et al., 2023).

This situation leads to the central paradox reviewed in this article. The scientific consensus on catastrophic climate risks is robust, and some renewable technologies have become economically competitive. Yet, aggregate emissions

remain stubbornly high, and political commitment to sustainability fluctuates significantly. Why do the United States and China – both possessing the state capacity and economic resources for decisive action – pursue increasingly divergent and often contradictory sustainability strategies? While China consolidates a state-led developmental model that greatly expands renewables but continues to rely on coal, the United States oscillates between regulatory rollback and green industrial policy, often held hostage by domestic polarisation.

To address this conundrum, we ask: how do political-economic structures, attitudes toward multilateralism, energy strategies and demographic dynamics jointly shape climate trajectories in the United States and China? Answering this analytically requires four linked tasks: (i) establishing a comparative structural and emissions baseline for the two countries; (ii) tracing how demographic pressures – ageing, gender composition and urbanisation – shape consumption patterns and political priorities in each; (iii) assessing how the erosion of multilateral climate governance is reshaping each country's strategic posture; and (iv) synthesising these three strands to explain the resulting divergence in sustainability outcomes and its implications for global governance.

We argue that a sound explanation requires integrating political economy with demographic analysis. We posit that population dynamics – not just as a variable of scale but as a driver of political anxiety and economic policy – are central to understanding state behaviour (Samways, 2022). This paper contributes a comparative political-demographic framework focused on these two systemic cases, showing how, despite diverging political systems, both nations are converging toward similar anxieties regarding demographic stagnation, which in turn shapes their economic imperatives and environmental footprints.

The remainder of the paper analyses these various issues sequentially. In Section 2, in order to establish a comparative structural and emissions baseline, we examine the structural profiles, emission metrics and historical responsibility of the United States and China, contrasting the 2025 resurgence in US emissions and fossil-fuel security strategy against China's renewable energy surge. In Section 3, in order to trace the demographic drivers of political anxiety identified above, we examine how population ageing, gender balance and urbanisation shape consumption and sustainability strategies in both countries. In Section 4, in order to assess

how the erosion of multilateral governance is reshaping national strategy, we analyse the systemic consequences of US withdrawal from multilateralism alongside China's strategic positioning within a fragmented international order. Section 5 then synthesises these three strands – political economy, demography and multilateralism – into a comparative account of why the two countries are diverging, as read through the lenses of historical responsibility and governance capacity. Finally, Section 6 draws out the implications of this divergence for the prospects of coordinated global action, situating our comparison of the world's two major emitters as a wider lens on the broader fracturing of multilateral climate governance.

2. Comparative framework and case-study approach: The United States and China

To comprehend the divergent sustainability trajectories of the United States and China, it is essential to consider comparative metrics on climate change within the context of their respective geopolitical configurations. The disparities between these two systemic rivals are manifested primarily through different political structures and approaches to policy implementation, but it is also affected by the selection of the metrics themselves. This study adopts a multi-dimensional comparative framework that triangulates structural economic profiles, emission metrics and historical responsibility.

2.1 Structural profiles of United States and China in relation to global climate governance

The responsibility for differences in emission levels between the United States and China is underpinned by a fundamental systemic cleavage in political economies. The two nations represent divergent models of governance, each generating distinct constraints and opportunities for decarbonisation.

The United States has the highest per-capita energy consumption among major economies, and a status as the largest global producer of oil and natural gas (IEA, 2025). Its climate governance is severely constrained by fragmented federalism and intense political polarisation that disrupts policy continuity. Thus, the United States exhibits 'political volatility', wherein climate policy is frequently held hostage by electoral cycles and the oscillation between regulatory expansion and rollback.

The United States relies heavily on market-driven mechanisms (such as tax credits under the Inflation Reduction Act) and subnational initiatives to drive progress. However, such progress is constantly threatened by federal reversal. As the policy oscillations between recent administrations illustrate, the United States lacks a binding, long-term industrial policy for decarbonisation, creating an investment environment defined by uncertainty. Drawing on Strong Structuration Theory, Samways and Anderson-Samways (2026) show how agents' 'hierarchy of purposes' and need for 'ontological security' can lead immediate individual priorities to override collective environmental goals, generating the kind of short-termism and volatility observed in US climate politics. The continued availability of cheap natural gas, the resurgence of domestic fossil fuel production and strategic initiatives to secure foreign hydrocarbon resources further entrench carbon lock-in, notwithstanding intermittent rhetorical commitments to net-zero emissions (Rosén and Neuhold, 2022).

Meanwhile, China's approach can be characterised as 'state-led pragmatism', wherein decarbonisation is pursued not merely as an environmental imperative but as a strategy for energy security and industrial dominance. It is managed by a high-capacity state apparatus capable of executing long-term strategic energy and inter-regional planning (IEA, 2025). The Chinese state leverages its control over financial markets and state-owned enterprises (SOEs) to direct massive capital flows into strategic sectors. This stance has propitiated the expansion of renewable energy.

China's structural profile is defined by an energy mix wherein coal remains the backbone of primary supply, supporting an export-oriented industrial base that serves as the 'factory of the world'. Although China manufactures over eighty per cent of the world's solar panels, it continues to approve coal power plants to ensure its own grid stability (Lewis, 2023). This dual strategy allows Beijing to peak emissions while avoiding the political risks of energy shortages, framing the transition as a controlled engineering challenge rather than a partisan debate.

These contrasting models generate asymmetric implications for global decarbonisation. The United States provides innovation and financial depth, but its systemic unreliability, as well as its disdain for global concerns and initiatives – as discussed in Section 4 – undermine the diplomatic trust required for a coordinated

global response. Conversely, China's model provides the global market with the necessary hardware (solar, wind, batteries) to lower transition costs worldwide, yet its continued domestic coal dependence threatens to consume the remaining global carbon budget.

2.2 Emission metrics and responsibility

The assessment of climate responsibility relies heavily on three distinct accounting methodologies: aggregate versus per capita emissions; territorial – versus consumption – based accounting; and cumulative versus current emissions.

First, the distinction between aggregate and per capita emissions highlights the tension between national impact and individual equity. According to the authoritative *Global Carbon Budget* (Friedlingstein et al., 2026), China has cemented its position as the world's largest annual aggregate emitter, accounting for approximately 31 per cent of annual global fossil CO₂ output, while the United States accounts for roughly fourteen per cent. However, these aggregate figures obscure socio-economic differentials. When adjusted for population size, the average American remains responsible for significantly more emissions than the average Chinese. According to the *Emissions Database for Global Atmospheric Research (EDGAR)*, US per capita emissions stand at approximately 13.6 tonnes of CO₂, whereas China's average is approximately 9.1 tonnes (Crippa et al., 2025). This difference reflects a material lifestyle and urban infrastructure in the United States that remain deeply embedded in high-energy consumption.

Second, the contrast between territorial and consumption-based emissions corrects for the distortions of international trade. The United States' consumption-based CO₂ emissions tend to exceed its territorial (production-based) emissions, reflecting net imports of embodied carbon. Meanwhile, China's consumption-based emissions are lower than its production-based emissions, indicating that China is a net exporter of embodied CO₂. This asymmetry is vividly illustrated by China-United States trade flows: in 2017, roughly 288 million tonnes of CO₂ were emitted in China to produce goods ultimately consumed in the United States, while only 46 million tonnes of CO₂ were embodied in US exports consumed in China, yielding a net transfer of about 242 Mt CO₂ from US demand for Chinese products (Dai et al., 2023).

Thus, trade-adjusted accounting raises US emissions responsibilities relative to territorial inventories and lowers China's comparative footprint, situating US consumption patterns as an important driver of China's emissions. However, China's consumption-based per capita emissions have also risen rapidly and, by 2022, matched those of the United Kingdom, signalling that domestic consumption is playing an increasingly important role alongside export-driven production (Our World in Data, 2025). This national average also conceals substantial internal inequalities: China's carbon emissions exhibit a pronounced spatial correlation network with a core–periphery structure, in which most coastal developed regions form an 'isolate' cluster while central and western regions absorb spillover effects (Dong and Li, 2022). Urban households maintain substantially higher per capita carbon footprints than rural ones, although this gap has been narrowing over time (Yujie Ge et al., 2026). In this context, US consumption patterns remain a significant driver of China's emissions, but China's own domestic consumption and regional disparities are becoming increasingly important factors in its national carbon profile.

Third, and perhaps most politically contentious, is the metric of historical (cumulative) emissions. Climate change is driven by the stock of greenhouse gases accumulating in the atmosphere over time. Analysis of data from the Global Carbon Budget reveals that, for the 1850–2022 period, the United States remained the single largest historical contributor. In terms of cumulative fossil CO₂, the United States is responsible for approximately twenty per cent of the global total, while China's share is approximately eleven per cent, despite its recent surge in annual output (Evans, 2021; Friedlingstein et al., 2023). This metric underpins the ethical framework of 'Common but Differentiated Responsibilities' (CBDR), framing the urgency of American decarbonisation, not as a voluntary leadership effort, but as the settlement of an ecological debt to worldwide sustainability.

Cross-national survey evidence, however, reveals that large majorities in both advanced and emerging economies prefer burden-sharing based on current rather than historical emissions (Dabla-Norris et al., 2023). This tendency to discount past responsibility in public opinion suggests that, however ethically compelling the CBDR might be, the willingness to bear the costs of ecological debt weakens when it confronts immediate economic expectations and taken-for-granted living standards. Graham et al. (2017) provide complementary evidence on temporal

discounting: when asked to choose between policies with benefits spread across three generations (their own, their children's and their grandchildren's), a majority of British adults favoured policies that gave equal or greater weight to future generations – yet their study also shows that even this concern is bounded within relatively near generational horizons (children and grandchildren), leaving open a question as to whether similar solidarity would extend much further into the future.

2.3 Base years and narratives of responsibility

The geopolitical differences contestation extends to the selection of base years for emission reduction targets, which are generally chosen to maximise the appearance of progress. As detailed in national submissions to the UNFCCC, the United States anchors its Nationally Determined Contributions (NDCs) to 2005 – a year that coincides with its peak historical emissions. By selecting this baseline, the United States reports substantial percentage reductions that are partly driven by market-led fuel switching from coal to natural gas, rather than solely by structural climate policy. Conversely, China frames its responsibility through carbon intensity (emissions per unit of GDP) and a future 'peaking year' (before 2030), a narrative structure that accommodates its development imperatives. These diverging accounting choices allow both nations to claim environmental leadership while masking the 'credibility gap' between their current policies and the outcomes required to align with the 1.5°C limit (UNEP, 2023; Rogelj et al., 2023). For present purposes, emission comparisons will focus on objective indicators of accumulated and present emissions as estimated by major international organisations and other research initiatives.

2.4 Energy trajectories and geopolitical contradictions

The contrasting energy trajectories of the United States and China reveal a profound geopolitical contradiction in how the world's two largest emitters navigate the sustainability transition and conceptualise national security. In the United States, 2025 marked a definitive regression in climate mitigation efforts, characterised by a tangible resurgence of fossil fuel reliance. According to preliminary estimates by the Rhodium Group (Gaffney and King, 2026), US greenhouse gas emissions increased by 2.4 per cent in 2025, breaking a two-year decoupling trend and outpacing the projected economic growth of 1.9 per cent. This reversal was largely propelled by a 3.8 per cent increase in power-sector

emissions, driven by a thirteen per cent surge in coal generation required to meet escalating electricity demands from data centres, cryptocurrency operations and temperature-driven residential heating and cooling (Gaffney and King, 2026; Meier et al., 2017). This structural pressure on the grid was compounded by the deregulatory agenda of the incoming Trump administration, which initiated the rollback of pollution limits for gas and coal plants and delayed the retirement of fossil-fuel infrastructure, thereby reaffirming the country's carbon-intensive energy baseline (Brady, 2026).

Conversely, China has reached a pivotal structural juncture in its energy transition, leveraging massive state-led investments to fundamentally alter its power mix. Data from the energy think tank Ember (2025) demonstrate that, in the first half of 2025, the exponential growth of China's solar and wind generation was sufficient to meet the entirety of its electricity demand growth. This unprecedented expansion precipitated a two per cent structural decline in fossil fuel power generation and a corresponding drop in power-sector emissions, marking the first time that clean energy deployment has put China's CO₂ emissions into reverse despite sustained economic growth (Myllyvirta, 2025; Ember, 2025). While China continues to maintain a substantial coal fleet to ensure grid stability and manage the intermittency of renewables, its aggressive deployment of clean technologies instantiates a developmental model in which decarbonisation is increasingly synchronised with industrial upgrading (Hansen, Li and Svarverud, 2018).

These divergent domestic energy profiles are intrinsically linked to opposing geopolitical strategies, particularly concerning global oil security and hemispheric hegemony. The United States has doubled down on a fossil-oriented security paradigm, seeking to dominate regional and global hydrocarbon reserves to insulate its domestic economy from global price volatility. This approach is starkly illustrated by the Trump administration's manoeuvres in early 2026 to assert dominance over Venezuela's oil sector. Through Executive Orders designed to safeguard Venezuelan oil revenues and promises of regulatory protection for US oil majors, Washington has sought to drastically increase Venezuelan crude production under American oversight (The White House, 2026).

Additional geopolitical actions – such as the threat to invade Greenland, the repeated attempts to co-opt Canada's energy resources and the unilateral

declaration of war on Iran – align with this broader dominance strategy. Trump's neo-extractivist strategy treats the physical control of fossil fuel supply chains as the ultimate guarantor of national security and economic leverage, effectively deprioritising multilateral climate commitments in favour of raw energy dominance. Fossil fuel companies have significantly influenced the Trump administration through substantial political donations and strategic appointments of industry-aligned individuals to key positions. This has led to policies that prioritised increased oil and gas production, loosened environmental regulations and actively promoted the fossil fuel industry, reportedly resulting in major returns for these interests.

In stark contrast, China is systematically mitigating its geopolitical vulnerability by curtailing its reliance on imported oil through the rapid electrification of its transport sector. According to the International Energy Agency (2025), electric vehicles (EVs) accounted for nearly fifty per cent of all car sales in China during 2024, with projections reaching sixty per cent in 2025. Because China's percapita private car fleet remains far smaller than in the United States, the country avoids the lockin effect of a large stock of used international combustion engines (ICE), enabling a rapid leapfrog to EVs. This swift displacement of ICE vehicles has fundamentally altered global consumption patterns, leading to an imminent peak in Chinese transportation oil demand. By aggressively substituting imported oil with domestically generated renewable electricity, Beijing is not merely advancing a climate agenda; it is executing a critical national security strategy. The electrification of transport directly blunts the coercive potential of US naval dominance over strategic maritime oil choke points, rendering China's economy more resilient to external supply shocks, including the unprecedented rising prices of oil in the potential aftermath of the United States' war against Iran.

The juxtaposition of these energy trajectories exposes a deepening fracture in global climate governance, fundamentally altering the geopolitical landscape for the rest of the world. As the United States pivots toward consolidating a fossil-fuel bloc by leveraging Venezuelan reserves and co-opting other countries' resources as a strategic buffer, it risks isolating itself from the accelerating global clean energy economy. Meanwhile, China's strategy extends far beyond domestic decarbonisation. By aggressively dominating the manufacture of critical transition technologies such as solar photovoltaics, advanced batteries and EVs, and thus

accounting for approximately seventy per cent of the global output value in this sector, Beijing is actively exporting its energy paradigm (IEA, 2025).

This positioning establishes new vectors of geoeconomic influence, compelling developing nations in the Global South to navigate a fragmented international system torn between a US sphere of fossil-fuel security and a Chinese sphere of renewable technology dependence. Ultimately, these contradictions underscore the fact that the transition to sustainability is no longer merely an ecological imperative, but a primary battleground for twenty-first century global hegemony. While energy trajectories and geopolitical strategies dictate the immediate vectors of climate governance, these dynamics are intrinsically underpinned by long-term demographic shifts, as explored in the following section.

3. Population dynamics and sustainability

The size and shape of a country's ecological footprint is directly affected by its population size, composition and spatial distribution. However, population dynamics do not act in a vacuum; they function as critical amplifiers or attenuators of existing environmental pressures driven by modes of production and consumption. While demographic forces shape energy demand, they are mediated by the prevailing political economy and technological choices, which together influence political priorities in the environmental domain. Each factor affects consumption patterns, infrastructure needs and public preferences differently; together, they determine both the quantity and type of energy required and the political salience of environmental policies.

3.1 Attitudes and practices on population dynamics

Given the relative population sizes and consumption levels of the United States and China, their present attitudes and policies with regard to the rate and structure of population growth will have significant global environmental implications.

Large and growing populations require more residential energy, more transportation and more industrial output to meet immediate basic needs that often take precedence over environmental concerns. Conversely, countries with stagnant or declining populations may have slower growth in energy demand, enabling greater emphasis on upgrading efficiency, decommissioning polluting infrastructure and investing in low-carbon transitions. Eventually, declining

populations may face other difficulties due to a reduced labour force and increased expenditures for social security. However, these anticipated problems may not materialise as quickly or strongly as widely assumed. Other studies have shown that certain ageing societies appear to be significantly better off in social and environmental terms at a later stage of their demographic transitions (Acemoglu and Restrepo, 2017; Alves, 2024).

The impact of *population size* is directly affected by consumption levels: depopulation dividends are long-term and less effective than changes in consumption patterns (Barrahmoune et al., 2026). Thus, the United States has a per capita footprint that is 2.2 times that of China (7.9 to 3.6 ha per capita) due to its higher levels of consumption. On the other hand, China has a population that is 4.1 times the size of that in the United States and a footprint approximately twice its size (5.3B to 2.7B ha) (World Population Review, 2026).

These footprint asymmetries mirror broader economic disparities between the two countries. According to World Bank national accounts data, China's GDP reached approximately US\$18.7 trillion in 2024, against the United States' US\$29.2 trillion – nearly 1.6 times larger – while on a per capita basis the gap is far starker: roughly US\$13,300 for China versus approximately US\$85,800 for the United States, a ratio of over six to one (World Bank, 2025). China's per capita income places it within the World Bank's upper-middle-income bracket, and its growth trajectory continues to invite comparison with the 'middle-income trap' facing economies that struggle to shift from labour- and investment-driven growth to innovation-driven, high-income status (World Bank, 2025). Recent growth rates also diverge: China's economy grew by approximately five per cent in 2024, compared with 2.8 per cent in the United States, even as China's per capita income remains a fraction of the United States'.

Over the past fifty years, the trajectory and policies regarding population growth in the United States and China have followed divergent paths. Today, however, there is an emerging convergence in the outlook of both countries for the future. They both face similar structural pressures – ageing populations, low fertility and the need for innovation and labour – which push their policy and public attitudes toward favouring population growth or, at least, towards the maintenance of its current size. Over time, the United States has maintained a generally positive or permissive attitude toward natural increase and adopted fluctuating immigration

policy measures, depending on shifting national scenarios. However, recent years have shown a drastic change as the country futilely attempts to increase fertility and implement large-scale, but selective, immigration policies. Meanwhile, China has moved drastically from negative attitudes – enforced by coercive fertility limitation – to a state-driven revalorisation of population growth in response to demographic decline and its impacts on social security and labour concerns.

Although the two countries pursue different policy approaches – China through state-led pronatalist policies and the United States through a combination of family support and immigration – their governments increasingly portray demographic vitality as essential to economic growth, technological leadership, fiscal sustainability and geopolitical competitiveness. Thus, the demographic discourse in both the United States and China has shifted markedly toward concerns about population decline and aging. Both countries have largely abandoned the Neo-Malthusian framing of population as an environmental problem and instead adopted a geopolitical framing in which demographic strength is considered an essential component of national power.

This convergence reflects a broader redefinition of population, from a potential environmental liability to a strategic national asset. While these policies may strengthen economic resilience, they also create tensions with sustainability objectives; continued demographic and economic expansion may increase pressures on resource use and greenhouse gas emissions, unless accompanied by rapid gains in efficiency and decarbonisation, as well as by reduced consumption levels. Moreover, this shift has significant implications for international sustainability policy because it weakens political support for discussions linking population stabilisation to long-term environmental sustainability.

In short, despite their significant historical disparities on political, economic and social matters, the two nations now have converging stances on population growth; both value large populations for economic dynamism, geopolitical power and the support of social programmes. However, recent cross-national research confirms that the effectiveness of fertility policies remains modest and highly context-dependent, varying with institutional design, implementation capacity, and underlying socioeconomic conditions. While targeted measures can influence timing and intentions, sustained increases in fertility are most likely where

policies address structural constraints – particularly work-family balance, housing affordability and gender equity – rather than relying on pronatalist incentives alone (OECD, 2024).

It is essential to emphasise, however, that while the geopolitical objective of maintaining population size for national power is increasingly convergent, the underlying political mechanisms and ethical frameworks remain profoundly distinct. In the United States, the debate is increasingly entangled with ideological shifts regarding individual autonomy, reproductive rights and immigration. In China, aligning urban economic realities and youth preferences with state pronatalist goals will be a major challenge. There, pro-natalism is framed as an instrument of state developmental planning (Friedman, 2022; Feng, 2023). Acknowledging a convergence in strategic outlook does not, however, imply an equivalence in the degree of state intervention in private life.

Should these policies become effective in promoting population growth in either or both countries, they would inevitably spell greater stress on the environment. However, increasing population size appears to be an improbable outcome since, as discussed below, both the United States and China are finding it difficult to stimulate higher fertility or to encourage large-scale immigration.

3.2 The struggle to increase fertility levels

Total Fertility Rates (TFR) in both countries are well below replacement levels. The United States' TFR is approximately 1.60–1.86 while that of China is estimated to be around 1.00–1.02, one of the lowest globally. Moreover, the TFR is experiencing a continued downward trend in both countries (Our World in Data, 2024).

The promotion of higher fertility in the United States is hampered by economic and cultural barriers that are diametrically opposed to the objective of population growth (Hays, 2025). Thus, high housing and childcare costs lead many young adults to feel that they cannot afford children (Annie E. Casey Foundation, 2024). Teenage birth rates in the United States are declining dramatically and continue to hit historic lows (Gowen, 2026). Unlike most peer nations, the United States lacks a federal paid parental leave mandate, leaving parents to navigate a patchwork of employer policies that often force a choice between career stability and family growth (McCloskey and Wielk, 2025).

Shifting social norms further compound these structural pressures, with an increasing number of adults citing a desire for personal autonomy or concerns about climate change as reasons to remain child-free (Hays, 2025). Ultimately, this combination of structural barriers and evolving values suggests that even direct financial incentives, such as the Child Tax Credit, generally fail to fully bridge the gap between the desire for children and the practical realities of raising them, yielding mixed evidence on their overall fertility effects (Averett and Wang, 2023).

In contrast, China's population policy is now a key part of its economic strategy (Master, 2026). In a bid to arrest a looming demographic crisis, Beijing gradually lifted the birth caps from one to two children, then to three in 2021. However, efforts to promote higher fertility face multiple deeply rooted obstacles (Reuters, 2025; Chen, 2023):

- Rising housing and education costs and intense competition for school places make raising children expensive and risky for many families (Qiu, 2025);
- Long working hours, insufficient affordable childcare and parental leave, and persistent gendered expectations push women to choose careers over larger families (Tan and Wang, 2024);
- The *hukou* system and urban migration complicate access to public services for children (Cai and Zhong, 2025);
- Decades of low-fertility norms have altered personal preferences and lifestyles, reducing demand for more children (Zhang and Zhao, 2023);
- Rapid population aging raises the fiscal burden on younger cohorts while undermining confidence that additional children will be economically beneficial (Zhang and Zhao, 2023).

Regional inequalities and policy credibility concerns, after the abrupt end of the one-child era, together with limited fiscal capacity to offer generous, sustained incentives, further constrain the effectiveness of pronatalist measures (Reuters, 2025).

3.3. Immigration: Presumed needs and tangible drawbacks

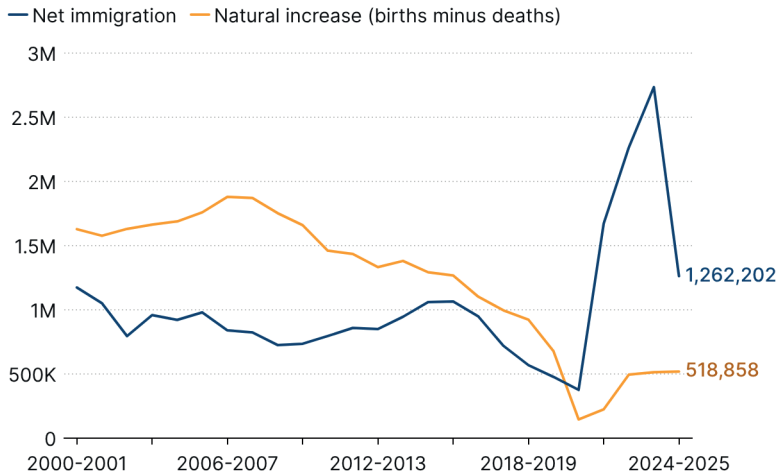
The inability to rapidly raise fertility to higher levels leaves one other option for increasing population size – immigration. Theoretically, this would be an obvious counterpoint to declining fertility; in reality, however, both countries are facing practical and cultural difficulties in implementing this approach. Consequently, both are somewhat ambivalent towards this type of solution.

In the United States, the political framing of immigration as a tool to reshape the nation's demographic and cultural makeup has been upended; immigration is now treated as an alleged security, criminal and/or cultural threat. This outlook has caused deep societal cleavages, particularly under the Trump administration, which strongly favours merit-based entries and frequently utilises harsh rhetoric to stigmatise migration from lower-income 'shithole countries'. His administration has adopted severe (and often violent) xenophobic measures to prevent and reverse migration from many countries. As aptly noted by the New York City Bar (26 January, 2026):

In his second administration, President Donald J. Trump has focused intensely on immigration, including aggressively pursuing removal of noncitizens, pressuring states and localities to cooperate in immigration enforcement, limiting access to humanitarian forms of relief, and closing the southern border, to name just a few of the myriad actions to date. Through a series of executive orders (EO), policy memoranda, and other actions, the Administration has taken major steps to fundamentally reshape immigration policy and practice that test the limits of executive power, often with the blessing of the Supreme Court.

It is remarkable that, despite all these negative stances, immigration has still accounted for some eighty per cent of all population growth in the United States since 2020, as shown in Figure 1. All this highlights both the futility of promoting growth through fertility measures in the current political/economic/social framework and the policy contradictions inherent in strictly inhibiting the entry and permanence of available and economically crucial migration pools.

Figure 1. Net immigration and natural increase, United States, 2000–01 to 2024–25*



SOURCE: FREY, 2026. [HTTPS://WWW.BROOKINGS.EDU/ARTICLES/REDUCED-IMMIGRATION-SLOWED-POPULATION-GROWTH-FOR-THE-NATION-AND-MOST-STATES-NEW-CENSUS-DATA-SHOW/](https://www.brookings.edu/articles/reduced-immigration-slowed-population-growth-for-the-nation-and-most-states-new-census-data-show/) COURTESY OF THE BROOKINGS INSTITUTE. *1 JULY TO 30 JUNE OF EACH YEAR.

In China, a country that has historically been marked by massive emigration, recent attitudes toward foreign immigration are characterised by a sharp divide between an increasingly proactive official policy of ‘selective opening’ and a complex, sometimes polarised, unofficial public sentiment (Koslowski and Ding, 2024). The government officially promotes an image of an ‘open and inclusive’ nation, but views immigration primarily through the lens of economic utility and national security (OECD, 2025). To this purpose, it prioritises high-level professional talent while also promoting foreign businesses and tourism. At the same time, it has strict border security and is witnessing a spike in popular anti-foreign emotion due to resentment of the preferential treatment given to foreigners and foreign enterprises, as well as to economic anxiety and racial/cultural friction. Ultimately, Chinese officials do not appear to be seriously considering the possibility of opening the country to immigration flows: they are basically interested in attracting highly skilled workers (Manca, 2024). Consequently, China has a surprisingly low number of foreign-born residents – about 1 million, or just 0.07 per cent of its population (Poston Jr., 2023).

In both countries, the ability to counter declining birth rates with selective immigration flows will be additionally problematic due to the worldwide competition for highly skilled people of ‘acceptable’ racial, ethnic or socioeconomic origin. In practice, the supply of such preferred migrants is limited, given that most other developed countries are facing their own issues, due to low fertility and aging populations, and are therefore also tapping global manpower resources. Meanwhile, neither China nor the United States shows the political willingness to accept large-scale low-skilled labour to fill any demographic gaps.

While currently viewed as a strategic liability by both states, this unwanted demographic stagnation could inadvertently provide some degree of respite from global environmental challenges in the medium and long term, an outcome driven not by sustainability policy, but by socio-economic barriers to reproduction. Discussion as to what population size can live sustainably and in ‘acceptable’ conditions, globally and nationally, continue to be heated and widespread (Samways and Anderson-Samways, 2026), but the broad consensus is that reducing both population size and consumption levels is critical for sustainability, especially in affluent nations (Wiedmann et al., 2020).

3.4 Population composition

Demographic dynamics shape emissions baselines, mitigation potential and the political economy of climate transitions. Changes in age structure, gender composition, labour-force participation and spatial distribution influence emissions through lifecycle consumption, workforce trends, fiscal pressures, political coalitions and differing vulnerabilities and adaptive capacities (Intergovernmental Panel on Climate Change, 2023).

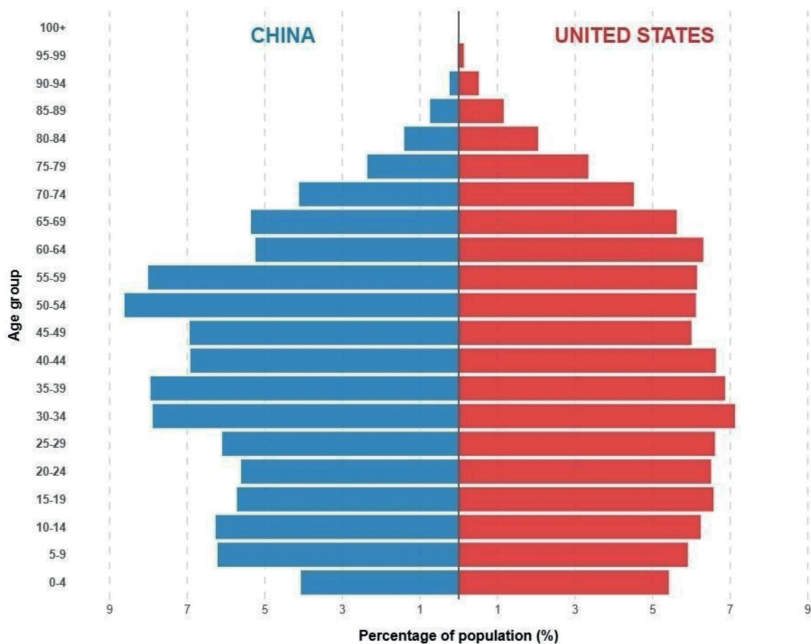
3.4.1 Age structure and environment

Both the United States and China are aging, though at different speeds. US aging has been moderated by higher fertility and immigration, leading to slower workforce growth rather than contraction. Meanwhile China’s prolonged low fertility and rising life expectancy have reduced its working-age population share. In both countries, older cohorts are expanding rapidly.

Aging is often linked to lower total emissions due to slower economic growth, but the effect is not straightforward (Ramos-Martin et al., 2026). Per capita emissions may rise as older households tend to be smaller and more energy-intensive. Thus, any aggregate 'demographic relief' may be offset unless supported by adjustments in urban design, housing and elderly care systems.

China's large cohorts born in the 1960s–70s are now driving rapid aging and impending labour-force decline; around 236 million people aged 50–59 are nearing retirement. The United States faces a similar, though smaller-scale, transition, with about 42 million in the same age group. Both countries have comparable shares of populations aged 50+ (about 36 per cent), though the US has a higher proportion aged 70+. (See Figure 2).

Figure 2. Age distribution of the total population in China and United States, 2023 (in %)



SOURCE: AUTHORS' ELABORATION BASED ON DATA FROM *WORLD POPULATION PROSPECTS 2024* (UN, 2024).

Population aging influences environmental outcomes through interconnected mechanisms such as labour supply, productivity, consumption patterns, and policy responses (Dalton et al., 2008; O'Neill et al., 2010). These dynamics operate in both the United States and China, but with different effects in each: the United States is a mature service economy with slower demographic change, whereas China is aging more rapidly and remains in a later stage of industrial transition. (United Nations, 2022).

In the United States, aging has been partly offset by immigration and relatively higher fertility, stabilising the workforce (United Nations, 2022). However, aging also contributes to political divergence: older populations tend to prioritise environmental protection alongside economic security, while younger cohorts show stronger support for climate action (Tonn, Waidley and Petrich, 2001). These differences contribute to policy fragmentation across states.

In China, aging tends to moderate industrial expansion and may slow energy demand growth. Empirical studies identify an inverted U-shaped relationship between population aging and carbon emissions, where emissions eventually decline as the population ages (Xiang et al., 2023). This effect appears partly independent of technological change, although policies such as delayed retirement and digitalisation can further improve energy efficiency (Wang and Sun, 2026).

Overall, the literature suggests that population aging can have net positive environmental effects, potentially reducing long-term emissions substantially – sometimes to a degree comparable to, or exceeding, technological change (Dalton et al., 2008).

3.4.2 Gender balance and environment

Gender composition shapes environmental outcomes because climate change is not gender neutral. At the macro level, the United States has maintained a relatively stable, near-biological balance (about 1.01) while China's sex ratio became highly skewed during the one-child policy era due to son preference, though it has recently moved toward normalisation (around 1.037) (Our World in Data, 2024). Beyond demographic balances, a substantial literature argues that integrating gender equality into climate policy improves sustainability

outcomes, because women tend to be both more vulnerable to climate risks and more engaged in pro-environmental behaviours (United Nations, 2024; Martine and Villarreal, 1997; Bhargava, 2022). Empirical evidence supports this linkage: cross-national analysis finds that higher gender equality (measured by the Global Gender Gap Index) is significantly associated with lower per capita CO₂ emissions (Sanchez-Olmedo et al., 2025), while micro-level data from France show women's food and transport carbon footprints to be about 26 per cent lower than men's (Berland and Leroutier, 2025). However, part of this differential could be ascribed to the fact that the jobs men do are more carbon intensive.

These general patterns play out differently in the two countries examined here. In the United States, gender disparities shape both vulnerability to climate impacts – through inequalities in income, caregiving burdens and access to resources – and policy responses, with women expressing higher levels of concern but remaining underrepresented in climate governance (Sellers, 2020). In China, women often demonstrate stronger environmental practices and leadership at the community level, though they remain underrepresented in technical and decision-making roles (Bhargava and Selby, 2023). Overall, the current scientific literature widely supports the idea that advancing gender equality and mainstreaming gender perspectives in climate policy can enhance mitigation and adaptation effectiveness while improving equity and resilience outcomes.

3.4.3 Population distribution and climate change

The rate and form of urban growth are critical determinants of environmental outcomes. Urbanisation reshapes land use in ways that intensify environmental pressures, including the expansion of surface urban heat islands (SUHI), reduced natural infiltration, diminished groundwater recharge, increased runoff and flooding, and the loss of vegetation through soil sealing. At the same time, the environmental impacts of urbanisation are not uniformly negative: more compact urban forms can reduce travel demand and transportation-related energy consumption, while high-density, vertical housing tends to improve residential energy efficiency (IPCC, 2022).

Urbanisation also interacts with demographic dynamics, having historically contributed to declines in fertility and, consequently, to slower population growth. This relationship reflects changes in socioeconomic conditions, including

increased access to education, employment opportunities, and shifts in family preferences associated with urban living (Martine, Alves and Cavenaghi, 2013). Thus, urbanisation operates as both an environmental and demographic force, with complex and sometimes offsetting effects.

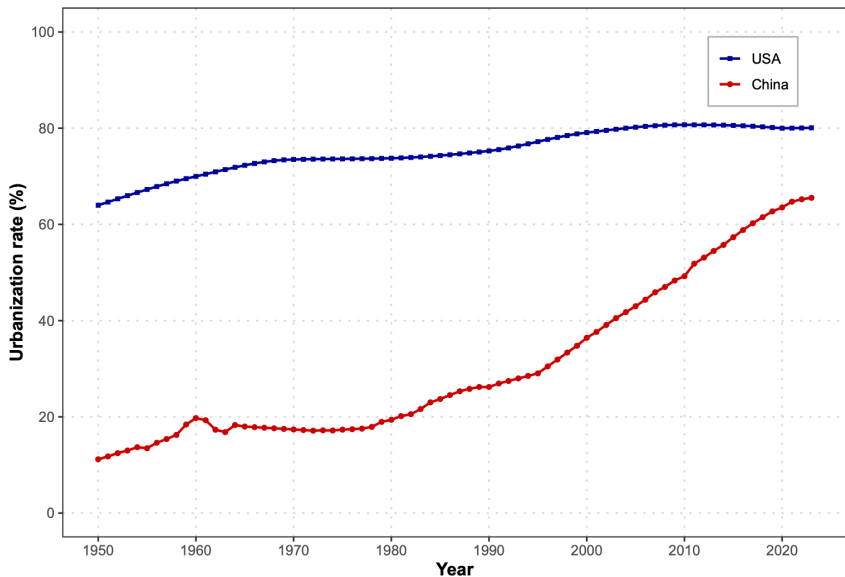
Although it began later than in many industrialised countries, China's urban transition has been exceptionally rapid. Since the late twentieth century – particularly following the economic reforms and 'Open Door' policy of the late 1970s – urbanisation has accelerated dramatically, driving large-scale rural-to-urban migration. Hundreds of millions of people have moved to expanding metropolitan areas such as Shenzhen and Shanghai, resulting in an urban population exceeding 65 per cent and the emergence of numerous megacities and interconnected urban agglomerations that now rank among the largest metropolitan economies in the world.

As shown in Figure 3, the United States underwent earlier urbanisation, tied to nineteenth-century industrialisation, and is now predominantly metropolitan, with about 86 per cent of the population living in such designated areas (US Census Bureau, 2025). Contemporary urban growth has been slower and more suburbanised, characterised by low-density, car-dependent development that raises transportation and residential energy demand. Although urban areas occupy only a small share of land, they exert disproportionate influence on energy, water and carbon systems, intensifying localised warming and hydrological change (Bounoua et al., 2015). Governance structures further shape environmental outcomes. Population density and proximity to a city affect partisan identity and election outcomes (Savat, 2020).

China's state-led urbanisation strategy has combined large-scale infrastructure expansion with policies to accelerate city growth, producing both environmental pressures and opportunities. Rapid urbanisation has contributed to overcrowding, pollution and infrastructure strain, while also enabling efficiency gains through dense development, mass transit, district heating and large-scale renewable deployment. Centralised planning has facilitated rapid expansion of electric and high-speed rail and utility-scale wind and solar, alongside national measures targeting urban environmental concerns, including air pollution controls and coal restrictions (Zhong-Wei, 2016). However, peri-urban sprawl, energy-

intensive industrial clusters and rising demand for cooling and private vehicles have sustained high electricity consumption, with urban surface temperatures increasing significantly. Urban expansion has also begun to influence regional climate systems, including the East Asian Summer Monsoon, since increased surface roughness weakens prevailing winds and alters precipitation dynamics critical to ecosystems and agriculture (Liu, S. et al., 2024a).

Figure 3. Urbanisation, the United States and China, 1950–2023 (in %)



SOURCE: AUTHORS' ELABORATION BASED ON DATA FROM WORLD POPULATION PROSPECTS 2024 (UN, 2024).

In brief, population size, composition, growth rates and urban-rural distribution shape energy demand, consumption patterns and environmental politics. The population dynamics of the United States and China – despite different historical trajectories – are converging toward concern over aging, low fertility and the need for labour and innovation. Both face serious structural limitations in promoting higher fertility levels. Both countries are also ambivalent about large-scale immigration and prefer selective, skilled flows; however, global competition for human resources and political resistance constrain this option.

Ultimately, if pronatalist or immigration policies were to succeed in these countries, environmental pressures would, *ceteris paribus*, intensify. Current socio-economic barriers to higher fertility and immigration could instead produce a modest, inadvertent reduction in future environmental stresses due to a relatively smaller population size – unless consumption-based emissions increase simultaneously. Urbanisation can further intensify environmental pressures in both countries through land-use changes that amplify urban heat islands, runoff and ecological loss; nevertheless, the compact urban form can improve transport and building energy efficiency.

4. The erosion of multilateralism: Impacts on contrasting climate approaches by the United States and China

The path to global sustainability ultimately depends on the strength of collaborative efforts aimed at reversing the imminent threat of environmental chaos. Population dynamics and national strategies in this domain are clearly pertinent, but international cooperation is essential to addressing climate change, a global crisis wherein greenhouse gases emitted anywhere affect the entire planet. Collaboration would enable coordinated emission reductions, facilitate technology transfer, provide crucial financial support to developing nations and ensure shared, equitable solutions that no single country can achieve alone. Such collaboration is clearly not on the horizon; indeed, global governance and cooperation on climate change are at a critical crossroads, characterised by a shift away from traditional inclusive multilateralism toward a more fragmented, transactional and regionalised model (Brookings Institution, 2025).

The wave of economic globalisation that intensified in the 1990s – characterised by trade liberalisation, financial integration and the global expansion of market-oriented reforms – reshaped the institutional landscape of multilateralism formatted during the post-war period. Therein, multilateral institutions have increasingly functioned as vehicles for the diffusion and enforcement of neoliberal economic norms, privileging rapid market integration over distributive equity and institutional cohesion. While globalisation presupposed the consolidation of a seamless global marketplace, in practice it contributed to governance fragmentation, domestic political backlash and a gradual erosion of trust in post-war multilateral arrangements (Cooper et al., 2025).

The weakening of multilateralism poses a structural threat to global sustainability. Effective climate governance depends on coordinated action, credible commitments and institutionalised enforcement mechanisms. The Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change underscored that climate risks are materialising more rapidly and with greater severity than previously projected (IPCC, 2023). Escalating global temperatures intensify adaptation constraints, while extreme weather events – storms, heatwaves, floods, droughts and wildfires – combine with biodiversity loss and sea-level rise to generate systemic risks. Climate change transcends territorial boundaries; although vulnerability is unevenly distributed, no state is immune to cascading ecological and socio-economic impacts. As noted by Antonio Guterres, Secretary General of the United Nations, ‘climate justice is an investment in peace and security, because vulnerability is everywhere’ (UN, 2026).

In this context, it is particularly crucial to humankind’s future that the United States and China, the world’s two major emitters, promote effectual initiatives aimed at fostering sustainability in their own land, while also using their enormous resources to promote collaboration among other nations in a worldwide campaign aimed at controlling the main determinants of global climate change. Large economies possess both the structural capacity and the historical responsibility to drive mitigation and adaptation efforts domestically while facilitating international cooperation.

In practice, however, the emerging discourses in the US and China reflect radically different postures. The dominant influence of Donald Trump and Xi Jinping has increasingly shaped the trajectory of global environmental governance, albeit in sharply contrasting ways. Trump’s emphasis on fossil fuel energy, economic nationalism, deregulation and reduced commitment to multilateral environmental agreements has weakened international climate cooperation and encouraged a more fragmented approach to global governance (Santer, 2026). In contrast, Xi has repeatedly spoken of ‘ecological civilisation’, a slogan which conveys the idea that environmental quality constitutes a form of long-term economic wealth rather than a constraint on development (Xi, 2018). He has also positioned China as a leading investor in renewable energy and low-carbon technologies while simultaneously maintaining extensive reliance on coal and prioritising economic growth and geopolitical influence over absolute emissions reductions (Araya, 2025).

Together, these two leaders exert a disproportionate influence over global climate outcomes given that their countries account for more than forty per cent of annual global greenhouse gas emissions and play central roles in international negotiations. Their divergent strategies have reinforced geopolitical competition, making coordinated global action more difficult at a time when collective leadership is essential to address accelerating climate change.

The noncommittal posture of the United States, still the largest cumulative emitter in history, is particularly detrimental to collective action, yet it is consistent with the country's increasingly aggressive negationist outlook on climate change. China, meanwhile, has registered concern over climate change and undertaken a variety of critical initiatives aimed at reducing its own emissions. Moreover, it has collaborated effectively with international proposals, pledging to peak CO₂ emissions before 2030 and to achieve carbon neutrality by 2060, despite its remaining structural limitations.

Diverging views on the urgency and the feasibility of operative action, especially as concerns the fadeout of fossil fuels, prevents the world from forging an effective coalition aimed at guarding the planet from ecological destruction (Igini, 2025). Repeated failures at recent Conferences of the Parties, including the notable absence of a US delegation to COP 30, illustrate persistent divergences regarding perspectives, burden-sharing, timelines and implementation pathways.

Altogether, the absence of a robust global coalition capable of aligning ambition with enforceable commitments remains a central impediment to global decarbonisation. In this light, divergences between the United States and China – respectively the largest historical emitter and the largest current annual emitter – warrant further analysis.

4.1 The United States: Retreat from multilateralism and climate retrenchment

The governing style and strategic orientation of the Trump administrations (2017–2021; 2025–) have greatly intensified strains on multilateral governance. Patterns evident in Trump's earlier career in the real estate sector – particularly a confrontational and highly personalised negotiation style – were subsequently transposed into his political practice. As a national leader of the world's most powerful country, this approach has been translated into a preference for

unilateral decision-making, rhetorical antagonism toward critics and a framing of international relations in competitive rather than cooperative terms. His public leadership style has frequently been interpreted by commentators and mental health professionals as reflecting a pronounced need for validation and personal affirmation (Glasser and Brand, 2025; Strobl, 2026; Applebaum, 2026).

Trump's political orientation – emphasising dominance, unilateralism and scepticism toward multilateral cooperation – has generated institutional volatility and weakened global governance, with particularly acute effects in the environmental domain (Temple, 2024). His administration has framed climate change as a 'hoax', promoting fossil fuel expansion and rejecting treaty-based cooperation, including in high-profile venues such as the 2025 UN General Assembly (Volcovici, 2025). Following his 2024 electoral victory, US foreign policy has increasingly prioritised national primacy and short-term economic gains over collective climate action. This stance builds on earlier actions during his first term, including withdrawal from the Paris Agreement and the rollback of emissions and environmental regulations. Although the Biden administration (2021–2025) had temporarily reversed course – re-joining the Paris Agreement and investing heavily in clean energy – the second Trump presidency has again curtailed environmental governance through budget cuts, regulatory dismantling and weakened institutional capacity at the Environmental Protection Agency, alongside proposals to halt climate pollution regulation and cancel renewable energy projects (Nilsen, 2026a; 2026b).

US disengagement has contributed to a leadership vacuum in global climate governance, undermining cooperation and weakening collective mitigation efforts. These policies extend beyond climate denialism, reflecting a broader strategy oriented toward resource extraction and geopolitical dominance, particularly in fossil fuel-rich regions such as Venezuela, Iran, Canada and Greenland. Retreating ice and shifting environmental conditions are being reframed as economic opportunities rather than global risks. This approach undermines trust and reciprocity within the global climate regime, introducing systemic instability.

Paradoxically, however, heightened geopolitical tensions and fossil fuel price volatility – exacerbated by US actions, including its conflict with Iran – could accelerate the global transition to renewable energy by improving its cost competitiveness and strategic appeal as a more secure, domestically deployable

energy source. Historically, major oil shocks (1973 Oil Crisis; 1979 Energy Crisis; 2022 Energy Crisis) have been primary catalysts for renewable energy development (Smil, 2017).

4.2 China: Strategic integration of climate policy into development.

In contrast to American negationism, China's climate trajectory reflects a gradual but substantive transformation. The state has increasingly embedded climate objectives within broader development planning, shifting from defensive multilateral participation to proactive domestic and international engagement.

In the early reform era following 1978, economic growth, industrialisation and poverty alleviation dominated policy priorities. Climate mitigation was viewed primarily through the lens of 'common but differentiated responsibilities', with China emphasising the historical accountability of industrialised countries while resisting binding caps under the Kyoto Protocol.

However, by the mid-2000s, severe domestic environmental issues – air pollution, water stress, land degradation – generated mounting socio-economic pressures. Energy security concerns and public health crises reframed environmental governance as a strategic imperative. The 11th Five-Year Plan (2006–2010) introduced binding energy-intensity targets, marking the first systematic effort to decouple growth from energy consumption. Although not initially framed as climate policy per se, these measures produced significant mitigation co-benefits.

Subsequent planning cycles incorporated explicit carbon-intensity targets, renewable energy expansion, and low-carbon industrial strategies. China has since emerged as the world's largest investor in solar and wind energy and a leading manufacturer of renewable technologies. Pilot carbon markets at provincial and municipal levels culminated in the launch of a national emissions trading system focused initially on the power sector.

A diplomatic turning point occurred with the 2014 bilateral climate announcement between the United States and China, which paved the way for cooperative momentum leading into the Paris negotiations. Under the Paris framework, China pledged to peak CO₂ emissions before 2030 and to increase the share of non-fossil fuels in primary energy consumption.

The 2020 declaration that China would achieve carbon neutrality by 2060 represented a further transformative commitment. The ‘dual carbon’ goals – peaking emissions and achieving neutrality – have been integrated into the broader vision of ecological civilisation and high-quality development. Climate policy has thus increasingly positioned climate change issues as structurally aligned with long-term economic modernisation rather than external constraint.

Nonetheless, operational contradictions persist. Though the world leader in wind and solar capacity, China’s strategy faces significant structural, economic and political limitations. Coal remains central to China’s energy system, particularly for grid stability and regional employment. Implementation disparities across provinces reflect variations in administrative capacity and economic structure. Balancing short-term macroeconomic stabilisation with long-term decarbonisation remains a recurrent tension (Auffhammer et al. 2021).

In sum, China’s climate change policy has evolved from a defensive, development-first stance to a more integrated and strategic approach that recognises climate action as compatible with, and even essential to, national development goals. While contradictions persist between ambition and practice, China’s scale, policy experimentation and long-term commitments make it a central driver of global climate outcomes. Understanding this evolution is crucial not only for assessing China’s domestic trajectory but also for evaluating the future effectiveness of international climate governance.

The divergence between the United States and China illustrates how the erosion of multilateralism interacts with domestic political trajectories to shape climate outcomes. Whereas one major power exhibits institutional retrenchment and unilateralism, the other has increasingly framed climate action as a component of strategic statecraft. The future effectiveness of the global climate regime will depend not only on aggregate ambition but on the credibility, continuity and geopolitical alignment of these two central actors.

In brief, the USA and China now represent two competing geopolitical and energy models. Under Trump, the USA is increasingly associated with military conflict, fossil fuel dependence, economic instability and aggressive nationalism – particularly amid tensions with Iran and rising global oil prices. China, by contrast,

is strategically benefiting from its massive investments in renewable energy technologies. Climate change, resource pressures and energy insecurity are redefining global geopolitics: renewable energy is becoming economically and technologically dominant due to declining costs, even as entrenched fossil fuel interests retain substantial political, financial, and military influence.

5. Discussion: Systemic discrepancies and governance implications

The diametrically opposed sustainability choices adopted by the United States and China find their roots in profound divergences over political economy and state capacity. The US model is characterised by extreme political volatility and regulatory reversals (Rosén and Neuhold, 2022), often driven by electoral considerations and an infrastructure locked into fossil fuel consumption (Raimi et al., 2023). In stark contrast, China has consolidated a state-led pragmatism, leveraging its state-owned enterprises to dominate global renewable energy manufacturing, even while maintaining a heavy reliance on coal to ensure energy security and stability, as argued by Lewis (2023). This structural asymmetry dictates how each country perceives climate risks: for China, it is a challenge of controlled engineering and geopolitical strategy; for the US, climate remains a battleground of partisan polarisation.

Beyond state capacities, historical responsibilities decisively shape these contrasting narratives. As Friedlingstein et al. (2023) and Evans (2021) point out, the United States carries the world's largest historical carbon debt, reinforcing the ethical urgency for its decarbonisation. China, on the other hand, relies on per capita emission metrics (Crippa et al., 2025) and consumption-based accounting (Liu, Z. et al., 2020) to reconcile its high current aggregate emissions with the imperative of continued development. These divergent assessment frameworks ultimately produce a persistent credibility gap (Rogelj et al., 2023; UNEP, 2023), undermining the trust necessary for the two powers to achieve the unified commitments demanded by the Paris Agreement.

The interplay between these political economies and the demographic window represents another crucial vector that simultaneously opens and constrains opportunities for structural decarbonisation. Population dynamics act not merely as a variable of scale, but as an inducer of strong political anxiety (Samways, 2022). China's rapidly aging population pressures the country to aggressively modernise

its electric transport network, reducing both oil import vulnerabilities and reliance on labour-intensive sectors. In this context, the contemporary literature shows that aging societies do not necessarily face a productive collapse but can, on the contrary, catalyse beneficial adaptations for sustainability-oriented reforms (Acemoglu and Restrepo, 2017; Alves, 2024).

Despite the environmental relief that demographic transition and declining population growth could provide, there is a paradoxical convergence in both nations' strategies to push for population expansion policies. The efforts to circumvent the declining fertility rate, in the United States and China, attempt to sustain demographic and economic dynamism. However, they also imply the maintenance of high systemic consumption rates. Consequently, the windows of opportunity to reduce aggregate pressure on natural resources are often squandered by imperatives of national growth. This refusal to integrate population decline or stabilisation as an ally of climate mitigation prevents both countries from fully utilising the demographic window to achieve structural decarbonisation.

Finally, the systemic consequences of these geopolitical divergences and demographic convergences culminate in the profound fragmentation of global climate governance. The hope for unified leadership has been replaced by a landscape of aggressive geoeconomic competition, marked by the US institutional retrenchment and its explicit shift toward climate denialism (Volcovici, 2025). The limits of traditional multilateralism have become evident in a post-consensus era, forcing a dramatic shift toward plurilateral coalitions or competing regional blocs. The world, therefore, finds itself fractured between a security sphere based on fossil fuel maintenance, driven by the United States, and the technological hegemony of renewable energies led by China. This precludes a cohesive front to address the climate emergency outlined by Ripple et al. (2023).

6. Conclusion

The divergent trajectories of the United States and China demonstrate that national climate strategies are inseparable from their domestic and geopolitical contexts. As shown in this paper:

- The United States and China are indispensable to global climate governance, but the prospects for a robust bilateral sustainability

coalition are constrained by intensifying geopolitical rivalry, technological competition and divergent development strategies.

- Distinct sustainability pathways arise from the interaction between emissions profiles, political economies, demographic shifts and governance systems. The United States is marked by political volatility, institutional retrenchment, and a renewed emphasis on fossil fuels, fragmenting collective climate efforts. In contrast, China's state-led, pragmatic model rapidly expands renewables – framing decarbonisation as a tool of industrial dominance and national security – despite persistent coal dependence.
- US efforts to secure global fossil fuel access – despite being the world's largest oil and gas producer – could indirectly accelerate renewable energy adoption elsewhere by increasing market instability and geopolitical dependence, pushing other states toward energy sovereignty through domestic clean energy.
- Withdrawal from green technology leadership by the US creates space for actors such as China to scale production, reduce costs, and expand global access to renewables.
- Governance models and demographic structures could jointly help to shape each country's capacity for long-term decarbonisation. However, both countries adopt ineffective pronatalist strategies that risk higher aggregate environmental impacts.
- As multilateralism erodes amid geoeconomic competition and the politicisation of energy, global climate governance must shift toward more pragmatic approaches.
- Policymakers should work through plurilateral coalitions and technological competition, while decoupling economic growth from population expansion and high-consumption models.

- Rather than a comprehensive partnership, future relations are likely to be characterised by selective cooperation on specific climate issues within a broader framework of strategic competition, making environmental governance increasingly fragmented and contingent (Keohane and Victor, 2016; DeSombre, 2020).

Finally, this study opens avenues for further research, including: the effects of migration and ageing on consumption dynamics and energy demand; the role of subnational climate governance in sustaining progress despite national inconsistencies; and the broader implications of US and Chinese models for climate strategies across the Global South and for the future architecture of international climate action.

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