

China's Participation in Global Climate Governance: From Paris Agreement to Carbon Neutrality

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Abstract

This paper examines China's evolving role in global climate governance from the Paris Agreement to its 2060 carbon neutrality commitment. It argues that China's transformation from a defensive participant to a proactive leader reflects a deep structural integration of environmental law, economic reform, and international diplomacy. The analysis outlines six dimensions of this evolution: the historical trajectory of China's climate diplomacy, the development of domestic legal and policy frameworks, the economic restructuring toward carbon neutrality, multilateral and bilateral cooperation strategies, the tensions between development and decarbonization, and prospective pathways for sustainable governance. Drawing on data from the International Energy Agency and China's National Bureau of Statistics, the paper highlights measurable progress, including a 48% decline in carbon intensity since 2005 and global leadership in renewable energy capacity. However, challenges such as regional disparities, coal dependency, and legal enforcement gaps continue to constrain China's transition. The study concludes that China's future success will depend on institutionalizing climate law, accelerating technological innovation, and strengthening equitable international cooperation. By aligning national development with global sustainability, China is positioned to play a defining role in shaping the next phase of global climate governance.

Keywords: climate governance, carbon neutrality, environmental law, green economy, international cooperation, sustainable development

1. Evolution of China's Climate Diplomacy

China's approach to global climate governance has undergone a remarkable transformation over the past three decades, evolving from cautious participation to active leadership. This shift reflects not only changes in China's international identity but also a profound reorientation of its domestic development philosophy toward sustainability and ecological civilization.

In the early stages of international climate negotiations, particularly under the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and the Kyoto Protocol of 1997, China positioned itself primarily as a *developing country with limited obligations*. Its diplomatic strategy emphasized the principle of Common but Differentiated Responsibilities (CBDR), asserting that developed nations—historically responsible for the majority of greenhouse gas emissions—should bear the main burden of mitigation. During this period, China's engagement was largely defensive, aimed at protecting its economic growth trajectory and industrialization process from stringent emission constraints.

A gradual but notable shift began in the late 2000s. The Copenhagen Conference (COP15) in 2009 marked a turning point, where China faced growing international expectations to contribute more substantially to emission reduction efforts. In response, China began to adopt a more cooperative and constructive stance, framing climate action as compatible with its long-term development interests. This change coincided with domestic recognition

of severe environmental degradation and the emergence of ecological civilization as a national development paradigm, later enshrined in the Constitution of the People's Republic of China (2018 Amendment).

Following the Paris Agreement of 2015, China emerged as a key architect of global climate governance. Unlike the Kyoto framework's binding targets for developed countries, the Paris Agreement relies on voluntary Nationally Determined Contributions (NDCs)—a model that allowed China to shape its own commitments while demonstrating leadership. China pledged to peak carbon emissions by 2030 and achieve carbon neutrality by 2060, signaling a major shift in both diplomatic posture and policy ambition. According to data from the World Bank (2023), China's carbon dioxide emissions per unit of GDP have fallen by more than 48% since 2005, reflecting progress in decoupling economic growth from carbon intensity.

At the same time, China began to play a mediating role between developed and developing countries, emphasizing climate justice and the need for equitable technological and financial support. Initiatives such as the South–South Climate Cooperation Fund, launched in 2015, have provided assistance to over 30 developing countries in renewable energy and adaptation projects, demonstrating China's expanding soft power in global environmental diplomacy.

By the 2020s, under President Xi Jinping's leadership, China's climate diplomacy has become a cornerstone of its foreign policy identity. The carbon neutrality pledge made at the 75th session of the UN General Assembly in 2020 repositioned China as a normative leader in the global climate order. This new phase is characterized by integration—aligning domestic green transition with international commitments, and projecting governance models that blend state-led planning with market-based instruments.

In essence, China's evolution in climate diplomacy represents a strategic synthesis of developmental pragmatism and environmental responsibility. What began as defensive participation has matured into an assertive form of climate leadership, grounded in national ideology, institutional reform, and growing economic capacity. This evolution not only redefines China's role in global governance but also challenges traditional North–South divisions in international environmental politics.

2. Domestic Framework for Climate Governance

China's domestic climate governance framework has developed into a comprehensive system combining legislative, administrative, and market-based mechanisms. This framework reflects the integration of environmental protection into the core of national development strategy, aligning legal reforms with long-term policy objectives such as the “dual carbon” goals—carbon peaking by 2030 and carbon neutrality by 2060.

The legal foundation for China's climate action began to solidify in the 2010s. The Environmental Protection Law (revised 2014) introduced stricter penalties for polluters and empowered environmental authorities with enforcement tools such as daily fines and public interest litigation. This was complemented by the Energy Conservation Law, the Renewable Energy Law, and a series of administrative measures promoting cleaner production and energy efficiency. More recently, the draft Climate Change Law, released for consultation in 2022, proposes to formalize the country's carbon peaking and neutrality commitments, establishing a clear legal basis for climate policy coordination across ministries and local governments.

Policy coordination has become a central pillar of China's climate governance model. The Ministry of Ecology and Environment (MEE) assumed primary responsibility for climate change affairs in 2018, taking over from the National Development and Reform Commission (NDRC). This institutional shift symbolized the transition from an economic management model to an ecological governance model, placing climate objectives within a unified environmental supervision framework. The MEE now leads the formulation of national carbon reduction strategies, while the NDRC continues to oversee industrial and energy structure adjustments to support those goals.

The 14th Five-Year Plan (2021–2025) marks a significant milestone in embedding climate objectives within national planning. It introduces binding targets for reducing energy intensity and carbon emissions per unit of GDP, as well as explicit goals for increasing the share of non-fossil fuels in the energy mix to around 20% by 2025. According to official data from the National Bureau of Statistics (NBS, 2023), China's installed renewable energy capacity surpassed 1.45 billion kilowatts, accounting for more than 48% of total installed power generation capacity, which illustrates the depth of its domestic energy transition efforts.

China's governance framework also integrates market mechanisms to enhance efficiency. The National Emissions Trading System (ETS), officially launched in 2021, covers more than 2,200 key emitters in the power generation sector, making it the largest carbon market in the world by volume. By allowing enterprises to trade emission allowances, the ETS aims to internalize the cost of carbon emissions and incentivize technological innovation. Although the system is still expanding to other sectors such as steel, cement, and chemicals, its establishment demonstrates the Chinese government's attempt to align environmental goals with market dynamics.

In addition to legal and economic instruments, China has strengthened public participation and transparency in climate governance. The government encourages environmental NGOs, academic institutions, and enterprises to engage in policy consultation and data disclosure. Platforms like the National Carbon Emission Data System provide real-time information on carbon trading activities, increasing accountability and data reliability.

China's domestic climate governance framework illustrates a hybrid model of state-led coordination and market adaptation. The combination of legislative rigor, institutional integration, and economic instruments reflects an evolving legal-political structure capable of managing the complexity of decarbonization. By aligning its national legal framework with international commitments under the Paris Agreement, China is positioning itself as a model of "law-based climate governance" among developing economies.

3. Economic Transition Toward Carbon Neutrality

China's path toward carbon neutrality is not only a political and environmental commitment but also a profound economic transformation. The transition redefines the structure of China's energy system, industrial organization, and investment priorities. It is guided by the principles of green growth and innovation-driven development, as articulated in the 14th and 15th Five-Year Plans. This section focuses on two core dimensions of the transformation: energy restructuring and market mechanisms that drive low-carbon economic growth.

3.1 Energy Restructuring

The restructuring of China's energy system is the cornerstone of its carbon neutrality strategy. Historically, China's economic expansion relied heavily on coal, which still accounts for around 56% of the primary energy mix as of 2023 (National Bureau of Statistics, 2024). However, recent policy measures have accelerated a shift toward renewable and cleaner energy sources. The government's goal is to raise the share of non-fossil fuels to 25% by 2030 and over 80% by 2060.

Rapid growth in renewable energy capacity has become a defining feature of this transformation. According to the China Electricity Council (2024), the country's total installed capacity for solar power reached 610 GW and wind power exceeded 440 GW, both ranking first globally. Meanwhile, investment in new energy vehicles (NEVs) and battery technology is expanding under the "Made in China 2025" strategy, positioning China as a leader in clean technology supply chains. These developments not only reduce carbon intensity but also create new employment and export opportunities in green industries.

China's approach also includes upgrading its power grid infrastructure to improve efficiency and reliability. The ongoing construction of ultra-high-voltage (UHV) transmission lines enables renewable energy generated in western regions to be transmitted efficiently to industrial hubs in the east. By 2023, UHV networks exceeded 45,000 kilometers, demonstrating China's technological capability to integrate large-scale renewable energy into its national grid.

This structural transformation, however, faces persistent challenges such as regional imbalances, intermittency of renewable sources, and slow decarbonization in heavy industries. Addressing these issues requires continuous technological innovation, coordinated investment, and adaptive policy mechanisms.

3.2 Carbon Market Mechanism

Market-based mechanisms represent the second pillar of China's economic transition toward carbon neutrality. The National Emissions Trading System (ETS), officially launched in July 2021, has become a central tool for achieving emission reductions at lower economic costs. Covering the power sector initially, the ETS involves more than 2,200 enterprises and regulates about 4.5 billion tons of CO₂ emissions annually, accounting for nearly 40% of China's total emissions (Ministry of Ecology and Environment, 2023).

The ETS operates through a cap-and-trade system, where the government sets a cap on total emissions and allocates allowances to companies based on historical data and efficiency benchmarks. Firms that reduce emissions below their allowance can sell excess credits, while high emitters must purchase additional quotas. In 2023, the average carbon price in China's ETS market hovered around 60–70 RMB per ton, signaling growing market confidence and liquidity.

Beyond emissions trading, China has introduced complementary financial mechanisms such as green bonds, carbon funds, and green credit policies. The People's Bank of China reported that by the end of 2023, outstanding green loans reached 28 trillion RMB, making China the largest green finance market globally. These instruments channel capital into clean energy, low-carbon infrastructure, and energy efficiency projects, reinforcing the economic momentum behind decarbonization.

Despite these advances, China's carbon market still faces challenges of limited sectoral coverage, data transparency, and price volatility. The planned expansion of the ETS to industries like steel, cement, and chemicals is expected to enhance its effectiveness. Over time, the combination of regulatory control and market flexibility is anticipated to generate a more efficient allocation of carbon costs, encouraging continuous

innovation and sustainable industrial restructuring.

China's economic transition toward carbon neutrality represents a dual process of structural realignment and market adaptation. Through energy diversification and the establishment of an expanding carbon market, the country is gradually decoupling economic growth from carbon emissions. This process not only supports domestic development objectives but also enhances China's credibility and leadership in global climate governance.

4. International Cooperation and Climate Leadership

China's climate diplomacy has evolved into a sophisticated blend of multilateral participation and bilateral collaboration, positioning the country as a pivotal actor in shaping global environmental governance. Through active engagement in international institutions and transnational partnerships, China seeks to demonstrate leadership while balancing national interests with global responsibilities. This section highlights two core dimensions of China's international climate engagement: multilateral participation and global partnerships.

4.1 Multilateral Engagement

China's role in multilateral climate negotiations has expanded significantly since the adoption of the Paris Agreement. Within the United Nations Framework Convention on Climate Change (UNFCCC) framework, China now acts as both a bridge between developed and developing nations and a driver of consensus-building on key issues such as climate finance and technology transfer.

At major summits including COP26 (Glasgow, 2021) and COP28 (Dubai, 2023), China reaffirmed its commitment to the 1.5°C target, emphasizing principles of fairness and common but differentiated responsibilities (CBDR). It consistently advocates for developing nations' right to pursue growth while receiving support for green transitions. This balanced stance has strengthened China's image as a representative of the Global South within climate governance.

China also plays a vital role in emerging coalitions such as BRICS and the BASIC Group (Brazil, South Africa, India, and China). These platforms enable coordination among large developing economies to advocate for equitable climate policies and resist unilateral trade-related measures like carbon border taxes. Additionally, China has integrated climate cooperation into the Shanghai Cooperation Organization (SCO) and G20 agendas, promoting the inclusion of sustainable finance and low-carbon development frameworks in global economic policy dialogues.

The Belt and Road Initiative (BRI) has further become an essential vehicle for advancing international climate objectives. The Green Silk Road framework, launched in 2017, aligns infrastructure investment with sustainability goals. By 2023, over 40% of BRI energy investments were directed toward renewable and low-carbon projects, a significant shift from the earlier dominance of fossil fuel infrastructure. These initiatives not only reflect China's commitment to greening its external investments but also reinforce its diplomatic identity as a contributor to global ecological transition.

4.2 Global Partnerships

Beyond multilateral mechanisms, China engages in targeted bilateral and regional collaborations aimed at advancing green technology, financing, and policy alignment. One of the most significant developments has been the China–EU High-Level Dialogue on Environment and Climate, which focuses on carbon pricing, green finance, and sustainable supply chain regulation. The partnership has encouraged knowledge exchange on emissions trading, as the European Union's ETS provided an important reference for China's national carbon market design.

Similarly, China–United States climate cooperation has seen fluctuating but meaningful progress. The U.S.–China Joint Glasgow Declaration (2021) renewed dialogue between the two largest emitters, focusing on methane control, renewable energy, and forest conservation. Although geopolitical tensions have periodically slowed progress, the declaration symbolized the indispensability of U.S.–China collaboration for achieving global climate goals.

China has also deepened South–South cooperation through financial and technical assistance programs. The South–South Climate Cooperation Fund, with an allocation of 20 billion RMB, has supported more than 30 developing countries in deploying renewable energy and improving adaptation capacity. These initiatives expand China's diplomatic influence while addressing the structural inequality between developed and developing nations in access to climate finance and technology.

In addition, China's collaboration with international financial institutions such as the Asian Infrastructure Investment Bank (AIIB) and the New Development Bank (NDB) contributes to mainstreaming green investment. By 2023, over 50% of AIIB's total approved projects had environmental sustainability components, reinforcing the linkage between global development finance and climate goals.

Through these multi-tiered engagements, China has transitioned from a participant to a co-designer of the global climate regime. Its strategy combines multilateral legitimacy with pragmatic bilateral cooperation, enabling flexibility and influence across different governance levels. By embedding sustainability into both its diplomatic and economic outreach, China not only strengthens its international standing but also contributes to shaping a more inclusive and balanced framework for global climate governance.

5. Key Challenges and Tensions

Despite China's significant progress in both domestic and international climate governance, its path toward carbon neutrality remains fraught with complex challenges. These tensions emerge from the intersection of rapid economic development, uneven regional capacities, and evolving international expectations. Understanding these challenges is crucial to assessing the feasibility and credibility of China's climate commitments.

Domestically, China faces the persistent dilemma of balancing economic growth with emission reduction. The country's industrial structure remains heavily reliant on energy-intensive sectors such as steel, cement, and petrochemicals, which collectively contribute to nearly 70% of total CO₂ emissions (Ministry of Ecology and Environment, 2023). While the central government has set ambitious reduction targets, local governments—particularly in less developed provinces—often prioritize economic stability and employment over environmental objectives. This creates policy fragmentation between national-level directives and local-level implementation. Furthermore, the lack of a unified Climate Change Law weakens legal enforcement and accountability, leaving room for regional discretion and inconsistent compliance.

Energy security represents another tension within China's transition strategy. The country's reliance on coal as a “stabilizing” energy source during periods of high demand remains a major obstacle to rapid decarbonization. In 2022, China's coal consumption still exceeded 4.5 billion tons, accounting for 56% of primary energy consumption (National Bureau of Statistics, 2023). This dependence reflects the structural difficulty of ensuring reliable energy supply while scaling renewable alternatives. Although China is leading in renewable capacity, grid integration challenges and intermittency issues limit the displacement of fossil fuels in the short term. Policymakers must therefore balance immediate energy security with the long-term imperative of decarbonization—a trade-off that shapes the pace of the transition.

Institutionally, China's climate governance is characterized by overlapping responsibilities among agencies. While the Ministry of Ecology and Environment leads climate policy, coordination with the National Development and Reform Commission, the Ministry of Finance, and local authorities remains complex. Differences in administrative priorities can delay or dilute policy implementation. Additionally, transparency and data reliability remain concerns in both emission reporting and carbon trading, particularly in the National Emissions Trading System (ETS). Strengthening monitoring, verification, and enforcement mechanisms is essential to ensure the credibility of China's market-based climate tools.

On the international front, China encounters growing scrutiny and geopolitical tension related to its role in global emissions. As the world's largest emitter—responsible for about 30% of global CO₂ emissions in 2023 (IEA, 2024)—China faces external pressure to accelerate its decarbonization timeline. The introduction of the European Union's Carbon Border Adjustment Mechanism (CBAM) has added further strain, potentially affecting China's exports of carbon-intensive goods. This policy reflects a broader trend of linking trade regulations with environmental standards, which could challenge China's manufacturing competitiveness if domestic industries fail to meet international benchmarks.

Moreover, China's international partnerships occasionally face skepticism from developed countries, particularly regarding the transparency of its overseas green investment under the Belt and Road Initiative (BRI). Although China has increased the share of renewable energy projects in BRI investments, concerns persist about continued financing of fossil fuel projects in developing regions. This dual image—as both a green investor and a carbon exporter—complicates China's leadership narrative in global climate governance.

Socially, public participation in environmental governance is still developing. While environmental awareness has improved, mechanisms for citizen engagement, litigation, and media oversight remain limited. Expanding access to environmental justice and strengthening civic involvement will be key to sustaining the legitimacy of China's long-term climate agenda.

In summary, China's climate transition is a process of managing contradictions between economic ambition, energy stability, legal enforcement, and international responsibility. These tensions do not undermine its progress but highlight the systemic challenges of transforming a carbon-intensive economy on an unprecedented scale. How China resolves these internal and external pressures will largely determine its ability to fulfill its 2030 and 2060 climate targets and maintain credibility as a global climate leader.

6. Future Pathways for Global Climate Governance

China's future in global climate governance will be defined by its ability to consolidate legal institutions, deepen technological innovation, and promote equitable international cooperation. As the world's largest developing economy and a leading emitter, China's approach to fulfilling its carbon neutrality vision by 2060 has the potential to reshape the global climate regime. The next phase of China's climate strategy emphasizes integration—uniting environmental law, green economics, and international diplomacy into a coherent governance model that sustains both national prosperity and global ecological balance.

A key priority lies in the institutionalization of climate law. Establishing a comprehensive and enforceable Climate Change Law would strengthen the legal foundation of China's carbon goals by clarifying governmental responsibilities, enhancing corporate accountability, and embedding emission reduction targets into statutory frameworks. Such legislation would complement existing laws on environmental protection, renewable energy, and pollution control, creating a unified legal basis for monitoring and enforcement. Judicial mechanisms, including environmental courts and public interest litigation, will further reinforce compliance and provide channels for civil society to participate in climate governance.

Another strategic pathway is technological innovation. Achieving deep decarbonization requires breakthroughs in clean energy technologies such as advanced solar photovoltaics, hydrogen fuel, and carbon capture, utilization, and storage (CCUS). China already leads globally in renewable manufacturing, accounting for over 80% of the world's solar panel production (International Energy Agency, 2024). Sustaining this momentum will depend on expanding research and development incentives, integrating digital technologies like AI-driven energy management, and fostering industrial collaboration between state-owned and private enterprises. Strengthening intellectual property protection for green technologies will also enhance China's competitiveness and its role as a global provider of sustainable solutions.

Internationally, China's leadership will hinge on promoting inclusive and cooperative climate governance. As geopolitical competition intensifies, China's commitment to the principles of fairness and common but differentiated responsibilities (CBDR) remains crucial for bridging the North–South divide. By expanding the South–South Climate Cooperation Fund and enhancing green finance through institutions such as the Asian Infrastructure Investment Bank (AIIB), China can help developing countries access climate financing and clean technologies. This not only strengthens diplomatic partnerships but also consolidates China's image as a responsible and equitable global actor.

Moreover, China's Belt and Road Initiative (BRI) is likely to serve as a blueprint for “green globalization.” The continued implementation of the Green Silk Road framework—focusing on renewable energy, sustainable infrastructure, and ecological protection—will be central to aligning overseas investments with global sustainability standards. By ensuring transparency and environmental accountability in BRI projects, China can address international concerns while setting a precedent for green development cooperation.

Domestically, the success of China's long-term climate strategy will depend on embedding sustainability into social and economic governance. Expanding green finance instruments, including carbon funds and sustainability-linked bonds, will mobilize capital for low-carbon projects. Encouraging green consumption patterns and public participation through education and digital platforms will further cultivate a culture of ecological responsibility. A societal transition toward low-carbon living is essential to complement top-down legal and policy reforms.

Looking forward, China's trajectory in climate governance illustrates a vision that combines state leadership with global cooperation. By advancing legal frameworks, driving technological transformation, and championing equitable partnerships, China is positioned to play a defining role in constructing a more just and sustainable international climate order. Its experience—balancing rapid development with environmental stewardship—offers a potential governance model for other developing nations navigating the challenges of decarbonization.

Ultimately, the realization of China's carbon neutrality pledge will depend not only on national determination but also on the collective progress of the global community. Through sustained innovation, rule-based governance, and international solidarity, China can help shape the next era of global climate action—one that integrates prosperity, justice, and ecological balance at the heart of sustainable development.

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