Addressing Climate Change Is an Important Component of Improving Global Governance Postprint

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Abstract

Climate change is a serious fact supported by scientific evidence; therefore, addressing climate change is both essential for achieving sustainable development and an important domain of global governance. The Paris Agreement represents important progress in international cooperation to address common challenges facing humanity, and green and low-carbon development has become a mainstream global consensus. To achieve the common goal of global climate change response, countries need to strengthen cooperation and continuously enhance climate action. Developed countries must accelerate low-carbon transformation and development, while developing countries should also expedite low-carbon innovative development. China has played an active and constructive role in global climate governance. Guided by the Five Major Development Concepts, China's strategies and policies for addressing climate change will be continuously strengthened and implemented, thereby making its due greater contribution to global climate governance.

Full Text

Addressing Climate Change as a Key Aspect of Global Governance

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Climate change represents a scientifically substantiated and serious reality that humanity must confront. Consequently, addressing climate change is not only essential for achieving sustainable development but also constitutes a critical domain of global governance. The Paris Agreement marks significant progress in international cooperation to meet shared challenges facing humankind, and green, low-carbon development has become the mainstream consensus worldwide. Achieving the collective goal of combating climate change requires enhanced cooperation among all nations and continuously strengthened climate action. Developed countries must transition to low-carbon development as quickly as possible, while developing countries should accelerate their own low-carbon innovation. China has played a positive and constructive role in global climate governance. Guided by the Five Development Concepts, China' s strategies and policies for addressing climate change will continue to be reinforced and implemented, enabling the country to make its due contribution to global climate governance.

Climate change is a major common challenge facing all humanity. In recent years, under the guidance of the Scientific Development Concept and the "Five Development Concepts" —innovation, coordination, green development, openness, and sharing—China has continuously improved its climate change strategies. President Xi Jinping has explicitly stated that "addressing climate change is something we ourselves want to do, not something others ask us to do," establishing the guiding principle of using international climate cooperation as a key platform for improving global governance. Jointly tackling climate change has become an important component of building a community with a shared future for mankind, representing a crucial practice through which China exercises conceptual leadership, contributes "Chinese solutions" in multilateral settings, promotes reform of the global governance system, and builds new types of major-country relationships and consolidates strategic support in bilateral contexts [1-3]. The signing and entry into force of the Paris Agreement have restored confidence among nations in conducting global climate governance under the UN framework, vigorously promoted extensive international cooperation on climate change, and upheld the authority and effectiveness of the multilateral system [4].

On June 1, 2017, the newly elected U.S. President Donald Trump announced that the United States would withdraw from the Paris Agreement, introducing uncertainty into global climate governance. This decision not only reversed the progress of U.S. climate action but also created negative impacts for international cooperation on climate change and the global governance system. The Trump administration' s regression has been widely criticized by the international community. Leaders from China, the European Union, Germany, France, Italy, and other countries and blocs have issued successive statements reaffirming their commitment to implementing the Paris Agreement and actively addressing climate change [5-8]. Over more than two decades, the Intergovern-

mental Panel on Climate Change (IPCC) has conducted five scientific assessments, each making clearer the connection between climate change and greenhouse gas emissions from human activities, confirming with over 95% probability that human activities are the primary cause of global warming since 1951. If the extremely rapid rate of change in the Earth' s climate system continues, it will pose enormous risks to human society and the Earth system. Many negative impacts, particularly various extreme climate events, have already become evident. Human society must urgently slow climate change by reducing greenhouse gas emissions and has already been compelled to adopt adaptation measures.

The 2°C temperature control target is a major political decision based on scientific assessment. In 1992, countries worldwide unanimously adopted the United Nations Framework Convention on Climate Change (UNFCCC), which proposed stabilizing greenhouse gas concentrations at a level that would prevent dangerous anthropogenic interference with the climate system. This level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, ensure that food production is not threatened, and enable economic development to proceed sustainably. Beginning with its Second Assessment Report, the IPCC has continuously explored the scientific interpretation of this objective. The Second Assessment Report systematically evaluated the vulnerability of ecosystems and human communities to potential climate change, forming an important foundation for analyzing the impacts of temperature rise on water resources, sea levels, biodiversity, and food production [16]. Based on scientific assessment reports, the European Council first proposed controlling "the increase in global average surface temperature to less than 2°C above pre-industrial levels" as the global goal for addressing climate change [17].

In 2006, Sir Nicholas Stern, then economic advisor to the British Prime Minister, released *The Economics of Climate Change: The Stern Review*, which conducted cost-benefit economic analysis of climate response strategies and became an important theoretical underpinning for selecting temperature control targets. Supported by deepening natural and social science research, governments and multiple national blocs gradually reached consensus, forming agreement on the 2°C temperature control target. The Paris Agreement ultimately established "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels" as the global action target.

Addressing climate change is a key aspect of improving global governance. The global temperature control target represents a global political consensus built on scientific assessment, providing clear direction for global climate action. Achieving this goal requires all countries and social institutions to adopt proactive measures. To realize the global temperature control target, countries must accelerate action and strengthen cooperation. Various scientific assessments indicate that achieving the 2°C temperature control target requires nations to adopt strong policy measures and transition to a net-zero carbon energy system as early as possible, transforming development models and lifestyles. Global greenhouse

gas emissions must be reduced by about half by mid-century and achieve net-zero emissions in the second half of the century. This transformation will be extremely difficult. While achieving the goal remains possible, the time window is narrowing, and the urgency of action is increasing. Multiple countries have gradually adopted climate measures and begun seriously mitigating greenhouse gas emissions. Nations have submitted their "Nationally Determined Contributions" (NDCs) in accordance with the Paris Agreement, but if current commitments are not strengthened quickly, global temperature rise will likely reach 3.0°C–3.2°C by 2100, far exceeding the 2°C target [18]. The risks facing human society will increase significantly. All countries must accelerate and enhance emission reduction efforts to seize the time window and achieve the common goal of addressing climate change.

Developed countries must achieve low-carbon transition development as soon as possible. Since the Industrial Revolution, developed countries have emitted large quantities of carbon dioxide and other greenhouse gases, bearing primary historical responsibility and substantial current responsibility for global climate change. Developed countries need to continue leading emission reductions and achieve low-carbon transition development promptly. The world' s major developed countries are all transitioning toward low-carbon development, with varying transition pathways and Europe clearly in the lead. The EU-28' s total greenhouse gas emissions in 2015 were already 23.7% lower than in 1990 [19]. Low-carbon development requires firm political will, social consensus, and legal foundations. In Germany, the United Kingdom, France, and Nordic countries, the social and political foundation for actively addressing climate change has essentially been formed, and green, low-carbon development has been transformed into strong internal driving force. The EU and many European countries have conducted active explorations in management systems and mechanisms, economic structure, energy structure, technology research and development, and public awareness, achieving remarkable results. Low-carbon transition has yielded initial success, with ambitious long-term goals established and gradually being realized.

The United States has clearly lagged behind Europe in low-carbon transition. U.S. greenhouse gas emissions peaked in 2007, having increased 15.5% compared to 1990. Although emissions in 2015 were 10.4% lower than in 2007, they remained above 1990 levels, clearly failing to meet UNFCCC requirements [19]. The core of President Obama' s climate policy, the Clean Power Plan, would only reduce carbon dioxide emissions from fossil fuel combustion by 14.6% by 2025 compared to 2005 [20], and whether the economy-wide greenhouse gas reduction target of 26%–28% can be achieved remains highly uncertain. If President Trump withdraws from the Paris Agreement and abolishes climate policies such as the Clean Power Plan, U.S. emission reduction targets will become variables. Although numerous local governments and industries in the United States oppose Trump' s regressive policies and continue to adhere to established emission reduction and low-carbon transition directions, the U.S. government' s regression has clearly caused it to lose credibility and become a

negative factor.

The largest Western developed country' s policy reversals on a major human challenge like global climate change, constrained by domestic electoral politics and special interest groups, unable to form necessary political consensus or address major scientific and strategic issues, demonstrate its difficulty in leading the world in the correct direction and trend. It has also become an isolated minority among developed countries. Although the EU and other countries and blocs actively promote low-carbon transition and have willingness for international cooperation, they cannot form a decisively guiding coalition. While deeply dissatisfied with the U.S. regression, they can only wait and see. The significant divergence among developed countries in low-carbon transition development has added new variables to the global climate governance landscape.

Developing countries must achieve low-carbon innovation development as soon as possible. Most developing countries remain in underdeveloped conditions, with some having per capita GDP (in 2016) of less than $500 and some having annual per capita carbon dioxide emissions (in 2013) of less than 0.05 tons, though a few have already surpassed U.S. per capita emission levels [21]. Emerging economies like China have already entered the forefront of the world economy in terms of economic aggregate while also becoming major emitters. As a whole, developing countries' total and incremental greenhouse gas emissions have already significantly exceeded those of developed countries as their economies and societies develop rapidly. Many developing countries hope to develop quickly to escape poverty and improve living standards. Whether developing countries can achieve green, low-carbon development is beginning to play a decisive role in global climate change.

Thus far, no developed country, particularly major economic powers, has completed the low-carbon transition of its economic development model and achieved low-carbon development. Even some EU countries at the forefront of transition remain close to the starting point and far from the finish line. Developed countries have not provided developing countries with a ready-made model that enables rapid development while substantially slowing greenhouse gas emissions. Developed countries are transitioning from high-carbon development, whereas if developing countries follow this development model, they will inevitably repeat the high-carbon path. How to pioneer new models of green, low-carbon development is a major challenge facing all developing countries. If developing countries can achieve green, low-carbon development, they may accomplish leapfrog development, bypassing traditional high-carbon pathways and accelerating the narrowing of technological and economic gaps with developed countries. Only in this way can the world achieve global economic development, improve living standards, enable more countries and peoples to enjoy development achievements, while ensuring global carbon emissions peak as early as possible and decline rapidly, achieving zero-carbon emissions in the second half of the 21st century and thus realizing the common goal of addressing climate change.

Many European countries as well as Japan, the United States, and Canada have already forged different energy and emission pathways. Many European countries and Japan achieved much lower peak per capita energy consumption and per capita carbon emissions during their modernization than the United States and Canada, forming a relatively low-carbon "European-Japanese scenario" development path distinct from the high-carbon "U.S.-Canada scenario." This demonstrates that "high-carbon development" is not the only path to modernization [1]. Developing countries should learn from developed countries' experiences and lessons, actively conduct policy interventions, transform development patterns, and reduce carbon emissions associated with economic growth. By formulating and implementing proactive climate policies and measures to mitigate greenhouse gas emissions, they can achieve more sustainable development on a relatively low energy and resource consumption foundation. Low-carbon technology is developing rapidly worldwide and can already provide development prospects that are even more low-carbon than the "European-Japanese scenario."

The Paris Agreement promotes global climate change cooperation and establishes a new mechanism for continuously strengthening action. Effective climate response must rely on global cooperative action. On one hand, all countries should uphold shared principles and actively adopt climate measures to achieve common human goals. On the other hand, considering different national circumstances and capabilities, developing countries lacking capacity should receive necessary support when adopting these measures. From the UNFCCC to the Paris Agreement, the international community has gradually recognized a model of common action that is "common but differentiated, bottom-up, cooperative and supportive, and continuously strengthening." This model fully respects national sovereignty, allowing countries to determine their climate actions based on global scientific requirements and their own development priorities, while developing countries receive necessary support to maximize global participation and practical action. Through comprehensive and transparent information exchange on targets and progress, global action progress is regularly reviewed, and countries voluntarily and dynamically update their climate policies and measures, forming a gradual strengthening process that ultimately achieves global goals. This model, based on scientific understanding of climate change and strategic thinking on proactive response, encourages countries to take initiative without concern for others "free-riding," forming new development concepts, economic competitiveness, and political discourse power through low-carbon transition and innovation, reflecting institutional innovation in global climate governance.

China should continue to actively address climate change and play a leading role in global governance. China has played a positive and constructive role in global climate governance. From UNFCCC negotiations to the adoption and implementation of the Paris Agreement, China has been an active participant. As China' s economic development level and position in global emissions have changed, its importance in climate negotiations has continuously increased. During the Paris Agreement negotiations, China actively coordinated positions

with key parties, participated constructively in negotiations, proposed solutions, and led by example in fulfilling pre-2020 commitments, effectively facilitating the Agreement' s adoption and earning unanimous praise from the international community.

Implementing the Five Development Concepts and firmly addressing climate change proactively, China must enable more than 1.4 billion people to achieve comprehensive moderate prosperity, realize the great rejuvenation of the Chinese nation, and achieve long-term modernization goals. Even without climate change, China cannot repeat the high-energy, high-natural-resource consumption development path of developed countries. It must practice the "innovation, coordination, green development, openness, and sharing" Five Development Concepts to pioneer a new path of socialism with Chinese characteristics. Currently, green development is the most prominent issue requiring conceptual transformation. Climate change is the most severe and fundamental ecological and environmental problem facing humanity. If the global ecological balance is seriously disrupted, water resources become scarce, extreme climate events become increasingly frequent and severe, and biodiversity suffers devastating damage to the point where human living conditions in many places are severely degraded or even disappear, green development will lose its stable foundation. Without maintenance of the overall ecological environment, local environmental governance will also struggle to achieve expected results. Proactively addressing climate change is an important component of achieving green development. Realizing green, low-carbon development requires reducing emissions through efficient and clean production and rational consumption; guiding adequate, scientifically rational, and socially conscious consumption development through continuous technological innovation; developing safer, more efficient, and cleaner low-carbon energy systems more rapidly; forming more competitive productivity and production efficiency; and relying on technological innovation, management innovation, and even changes in production relations and global-level coordination innovation to achieve breakthroughs in development patterns. This will enable global development to break free from traditional energy and resource constraints and vicious competition among nations, making the world more secure and stable and reducing the threat of war. Proactively addressing climate change benefits not individual countries but all of humanity through shared achievements. Under the guidance of the Five Development Concepts, China' s climate action will continue to strengthen, its development will become more sustainable, and it will make greater contributions to global climate governance.

Strengthening confidence in the Four Matters of Confidence and using enhanced green, low-carbon development as an opportunity to fully demonstrate the superiority of socialism with Chinese characteristics. Adhering to green, low-carbon development and proactively addressing climate change is first and foremost a major test of whether a country' s social system maintains advanced characteristics. Climate change is an extremely complex scientific issue, and addressing it requires major transformation of society' s development model, involving all

aspects of the economy and society. Whether scientific research is advanced, whether systematic understanding of climate change issues is scientifically sound, and whether relevant scientific conclusions can be promptly transformed into political consensus have continuously tested governments, academia, and all sectors of society. The United States was once a leader in climate change science, with numerous scientists seriously studying climate science, climate economics, domestic climate policy, and global climate governance, and was a country that proposed many relevant methodological theories. However, the U.S. political decision-making process is not scientific—interest group struggles dominate government transitions, and policy formulation easily becomes detached from scientific evidence, causing its climate policies to swing repeatedly. An advocacy of unilateralist hegemonic diplomacy and pure America-first interests has led the United States to disregard the seriousness of international conventions and unwillingness to assume its due responsibilities. The U.S. withdrawal from the Paris Agreement is not the result of serious consideration of climate change science but rather stems from the inability of the U.S. political system to make effective scientific decisions on issues of global public interest and long-term strategic importance. Over more than two decades, Chinese scientists have fully analyzed and absorbed international research findings while conducting further scientific research, forming a scientific consensus on proactively addressing climate change. They have also actively participated in IPCC assessment work, such as serving as co-chair of IPCC Working Group I, contributing to global climate change scientific progress. Party and state leaders have grasped the overall situation and, from a strategic height, consolidated scientific conclusions on climate change, making comprehensive and correct judgments on proactive climate response, identifying climate change as an important issue for China' s sustainable development, and proposing a strategic policy of green, low-carbon, and sustainable development. China has gradually moved to the forefront of the world in energy conservation and emission reduction, low-carbon energy development, development pattern transformation, and low-carbon development, fully demonstrating China' s institutional advantage in grasping global strategic development directions and leading new development concepts and paths. Green, low-carbon transition development has not hindered China' s economic growth rate but has instead increased development momentum and enhanced economic and technological competitiveness. "Concentrating resources to accomplish major tasks" is the greatest advantage of China' s socialist system, providing necessary institutional guarantees for properly addressing climate change. China' s climate strategies and policies will continue to be improved and strengthened in practice, without fluctuating with U.S. policy swings.

Using global climate governance as an opportunity to further build and improve new types of international relations. The global nature of climate change makes addressing it an important domain of global governance. Global governance aims to coordinate national interests and policies to address various transnational and international challenges in the era of globalization and support countries in improving national governance. The U.S. withdrawal from

the Paris Agreement has further pushed China to the center of the global climate governance stage, with most countries raising expectations for China to play a core leading role. China' s progress in green, low-carbon development has attracted attention from more countries. We should first improve domestic green, low-carbon development, accelerate the energy revolution, achieve efficient, green, low-carbon, and innovative development, strive to peak emissions ahead of schedule, and reduce greenhouse gas emissions more quickly. Simultaneously, we should actively promote implementation of the Paris Agreement, work with the international community to gradually strengthen climate action, continuously advance toward the globally agreed 2°C temperature control target, consolidate and develop the international climate cooperation mechanism, and make it a successful case of establishing mutually beneficial cooperation and promoting new types of international relations for global development.

Climate change is characterized by long-term, global, uncertain, and potentially massive impacts. Greenhouse gas emissions from human activities are the primary cause of current climate change, and excessive greenhouse gas emissions represent the largest market failure in history regarding environmental externalities. Effectively addressing climate change must rely on government intervention and global cooperation to achieve its goals. From the UNFCCC to the Paris Agreement, governments worldwide have established mechanisms through negotiation and consultation, leveraging government intervention to jointly address climate change. Addressing climate change, reducing greenhouse gas emissions, and achieving low-carbon development have become global development trends that will not change due to individual countries' negative positions. On the contrary, negative responses to climate change will inevitably cause countries to fall behind in future development. Under the guidance of the Five Development Concepts, it is an inevitable trend for China to actively address climate change and participate in global climate governance. China must not only fulfill its commitments under international climate treaties but also continuously demonstrate the influence and contributions of Chinese pathways, Chinese theory, Chinese institutions, and Chinese culture in addressing climate change, making new contributions to improving global governance.

References

1. Du Xiangwan. Climate change response enters a historic new stage. Climate Change Research, 2016, 12(2): 79-82.
2. Xie Zhenhua. Promoting green, low-carbon development and participating in global climate governance. China Economic & Trade Herald, 2016, (3): 59.
3. He Jiankun. New mechanisms for global climate governance and low-carbon transformation of China' s economy. Wuhan University Journal (Philosophy & Social Sciences), 2016, 69(4): 5-12.
4. Intergovernmental Panel on Climate Change. IPCC Fifth Assessment Report (Working Group I, II and III reports). Geneva: IPCC, 2014.

5. Xi Jinping. Jointly building a community with a shared future for mankind—Keynote speech at the UN Office at Geneva. [2017-08-25]. http://news.xinhuanet.com/world/2017-01/18/c_{1120331545}.htm.
6. Ministry of Foreign Affairs. Xi Jinping meets with French President Emmanuel Macron. [2017-08-25]. http://www.mfa.gov.cn/web/zyxw/t1476413.shtml.
7. Macron E. Climate - Paris Agreement - United States - Statement by M. Emmanuel Macron, President of the Republic. [2017-08-25]. http://basedoc.diplomatie.gouv.fr/vues/Kiosque/FranceDiplomatie/kiosque.php?fichier=baen2017-06-02.html.
8. Merkel A. We must pool forces to mitigate climate change says Chancellor. [2017-08-25]. https://www.bundeskanzlerin.de/Content/EN/Artikel/2017/06_{en}/2017-06-02-usa-ausstieg-klimaabkommen_{en}.html.
9. Kemp L. Better out than in. Nature Climate Change, 2017, 7(7): 455.
10. Diringer E. Let Trump claim a better deal on climate. Nature, 2017, 546: 329.
11. Dong L. The Trump administration' s decision to withdraw the United States from the Paris Climate Agreement. Chinese Journal of Population Resources and Environment, 2017. doi: 10.1080/10042857.2017.1343903.
12. Dong L. China-EU climate cooperation and expectations for China' s leadership. Chinese Journal of Population Resources and Environment, 2017. doi: 10.1080/10042857.2017.1343905.
13. Haas P. Parxit, the United States, and the world. Chinese Journal of Population Resources and Environment, 2017. doi: 10.1080/10042857.2017.1343906.
14. Intergovernmental Panel on Climate Change. IPCC Fifth Assessment Report, Working Group I Report—Climate Change 2013: The Physical Science Basis. Cambridge (UK) and New York (USA): Cambridge University Press, 2013.
15. Intergovernmental Panel on Climate Change. IPCC Second Assessment: Climate Change 1995—IPCC Report. Geneva: IPCC, 1995.
16. EU Council of Ministers. Community strategy on climate change—Council conclusions. Luxembourg: European Union, 1996.
17. United Nations Environment Programme. The emissions gap report 2016. Nairobi, Kenya: UNEP, 2016.
18. UNFCCC. Greenhouse gas inventory data. https://di.unfccc.int/time_{series}.
19. U.S. Energy Information Administration. Annual Energy Outlook 2017 with projections to 2050. Washington DC: U.S. Department of Energy, 2017.
20. World Bank. World development indicators. https://data.worldbank.org/indicator.

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Note: Figure translations are in progress. See original paper for figures.