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On the Importance and Challenges of the Principle of "Common but Differentiated Responsibilities" in Global Climate Governance

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Abstract. This paper explores the pivotal role of the "Common but Differentiated Responsibilities" principle in global climate governance, examining its historical evolution, scientific basis, practical dilemmas, and China's response strategies. Since its formal establishment in the 1992 United Nations Framework Convention on Climate Change (UNFCCC), this principle has served as the cornerstone of global climate governance . It acknowledges the shared responsibility of all nations in addressing climate change while fully recognizing the differences between developed and developing countries in historical emissions, development stages, and capabilities . However, in recent years, this principle has confronted numerous challenges. Some developed countries have attempted to obscure or distort it to evade responsibility, such as failing to deliver on mitigation actions and unfulfilled climate finance commitments. China has consistently upheld and implemented this principle, actively fulfilling its emission reduction obligations. It has proposed the "carbon peak and carbon neutrality" goals, promoted energy transition and green development, and contributed Chinese wisdom to advancing global climate governance. This paper analyzes the principle's essence, scientific basis, and international practices, emphasizing its importance for fairness and sustainable development, while outlining future pathways to strengthen it. Research indicates that upholding the CBDR principle is crucial for addressing climate change, requiring enhanced international cooperation, financial mechanisms, and capacity building.

Keywords: Common but Differentiated Responsibilities, Global Climate Governance, Historical Responsibility, Sustainable Development

1. Introduction

Climate change stands as one of the most severe challenges facing the global community today, posing a grave threat to human survival and development [1]. Issues such as glacial melting, sea-level rise, and frequent extreme weather events continue to intensify, which significantly affect ecosystems, economic development, and social stability [2]. In addressing climate change, the principle of "Common but Differentiated Responsibilities" has gained widespread recognition as a core guideline within the international community [3]. It not only embodies fairness and justice in

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global climate governance but also serves as a fundamental basis for advancing international cooperation and achieving effective emissions reductions. In recent years, as the climate crisis intensifies, the implementation of this principle faces new challenges, such as conflicts between developed countries' insufficient emission reduction willingness and developing countries' development needs.. In-depth research into the principle's essence, historical evolution, scientific basis, current challenges, and China's response strategies holds significant theoretical and practical value for promoting sound global climate governance and achieving sustainable human development. This paper is structured as follows: Section II analyzes the principle's essence and historical evolution; Section III explores its scientific basis; Section IV examines international practices and dilemmas; Section V showcases China's contributions; Section VI proposes recommendations for safeguarding the principle; and the conclusion summarizes the entire paper.

2. The essence and historical development of the "common but differentiated responsibilities" principle

2.1. Essence

The principle of "Common but Differentiated Responsibilities" comprises two key elements: common responsibility and differentiated responsibilities. Common responsibility emphasizes that climate change is a shared challenge for all humanity, and protecting the Earth's climate system is a collective obligation of all nations [4,5]. Responsibilities for climate change action should be differentiated based on historical emissions, development stages, and capabilities, reflecting the significant disparities between developed and developing countries. Developed countries have emitted large quantities of greenhouse gases over the long term, bearing major historical responsibility for climate change since the Industrial Revolution. Simultaneously, possessing stronger economic and technological capabilities, they should take the lead in action, assume greater emission reduction obligations, and provide developing countries with support in finance, technology, and capacity building [6]. Developing countries must also actively adopt measures to address climate change while pursuing economic development and poverty alleviation. However, they should not bear emission reduction burdens equivalent to those of developed countries; their commitments should be commensurate with their development stages and capabilities.

2.2. Historical development

The concept of this principle can be traced back to the 1972 United Nations Conference on the Human Environment in Stockholm [7]. This principle was formally established in the 1997 United Nations Framework Convention on Climate Change (UNFCCC) and further elaborated in the 1992 United Nations Convention on Climate Change. Its core significance was reaffirmed in the 2015 Paris Agreement [8].

3. Scientific basis for the principle of "common but differentiated responsibilities"

3.1. Causes of climate change

Scientific research indicates that current climate change is primarily caused by emissions from human activities, with carbon dioxide (CO_2) as the main greenhouse gas. Developed countries pioneered industrialization following the Industrial Revolution, leading to a dramatic surge in greenhouse gas emissions through the large-scale use of fossil fuels like coal, oil, and natural gas.

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Developed nations accounted for 95% of total CO_2 emissions between the mid-18th century and 1950, and this figure remained at 77% between 1950 and 2000 [9]. The cumulative accumulation of these historical greenhouse gas emissions in the atmosphere constitutes the primary driver of current climate change, exerting long-term impacts on the global climate system In contrast, developing countries, with relatively low historical emissions, initiated industrialization later and maintain significantly lower per capita carbon emissions than developed countries [10].

3.2. The cumulative effect of greenhouse gases in the atmosphere

Greenhouse gases exhibit long-term atmospheric persistence, particularly carbon dioxide, which remains in the atmosphere for centuries or longer after emission. This accumulation implies that a substantial portion of residual atmospheric CO_2 originates not from current emissions by developing countries but primarily from the early industrialization processes of Western nations. This cumulative effect underscores developed countries' historical responsibility for emissions while highlighting that addressing climate change cannot focus solely on current emission levels. Demanding that developing countries assume the same emission reduction responsibilities as developed countries, without considering historical responsibility, is clearly unfair and scientifically unjustified.

3.3. Development stages and adaptive capacities of different countries

Countries at different stages of development confront distinct tasks and challenges distinct. For the vast majority of developing countries, achieving industrialization, modernization and poverty eradication remains the paramount priority to meet their populations' basic survival and development needs.. During this process, developing nations must allocate significant resources to economic growth that elevates living standards. Imposing emission reduction burdens equivalent to those of developed countries at this stage would trap large populations in poverty, severely constraining social stability and sustainable development.

Furthermore, developing countries generally lack advanced, adequate, and well-established climate change response mechanisms. Developed countries, having undergone prolonged development, possess emergency response capabilities and hold distinct advantages in economic, technological, and managerial capacities.

4. The practice and challenges of the "common but differentiated responsibilities" principle in international climate negotiations

4.1. Key milestones in international climate negotiations

The international community has conducted a series of climate change negotiations and collaborations since the signing of the UNFCCC, achieving several key milestones.. The 1997 Kyoto Protocol stands as a pivotal outcome, establishing a concrete framework and timeline for global emission reduction actions while setting quantifiable emission reduction targets for developed countries [11].

The 2015 Paris Agreement marked another pivotal milestone, aiming to limit the global average temperature rise to well below 2°C above pre-industrial levels and pursue efforts to restrict it to 1.5°C [11]. The Paris Agreement emphasizes the concept of Nationally Determined Contributions (NDCs), whereby countries formulate and submit emission reduction targets based on their national circumstances, while strengthening international cooperation and transparency mechanisms. Since

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then, the annual United Nations Climate Change Conference (COP) has continuously advanced the global climate governance process, serving as a vital platform for nations to discuss and address climate change issues.

4.2. Challenges and deviations from the principle by developed countries

In recent years, some developed countries have attempted to obscure or distort the "common but differentiated responsibilities" principle to evade their emission reduction obligations. On one hand, some nations have underperformed in mitigation actions, failing to meet their pledged emission reduction targets on schedule. According to the 2022 National Greenhouse Gas Inventories submitted by developed countries to the Convention Secretariat, as of 2020, more than half of the developed country Parties (the EU as a whole) remained significantly off track in achieving their 2020 emission reduction targets. Some countries achieved only half of their pledged reduction targets, while others not only failed to reduce emissions but also experienced substantial increases in greenhouse gas emissions.

Meanwhile, the climate finance pledged by developed countries has been slow to materialize. At the 2009 Climate Change Conference, developed countries committed to providing $100 billion annually in climate finance to developing countries by 2020. However, this pledge remains unfulfilled, severely undermining the capacity and enthusiasm of developing countries to address climate change.

4.3. Developing countries' stance and demands

Developing countries firmly uphold the "common but differentiated responsibilities" principle, emphasizing that developed countries must shoulder historical responsibility by taking the lead in emissions reductions and providing adequate financial and technological support.

Developing countries argue that their development needs and unique national circumstances in climate change response cannot be ignored. They require gradual enhancement of their capacity to address emergencies while achieving sustainable economic development. Indian Prime Minister Narendra Modi once wrote an article, which strongly condemned developed nations that "prospered on fossil fuels", stating that their responsibility principle undermins the common but differentiated responsibilities principle. China has proposed measures such as promoting energy transition and conservation through its "carbon neutrality" goals. Many developing nations are taking proactive steps within their means to address climate change, such as Brazil's efforts to enhance carbon sinks and protect tropical rainforests. However, these endeavors require support and cooperation from developed countries; otherwise, the pressure becomes overwhelming for developing nations to tackle alone.

5. China's implementation and contributions to the principle of "common but differentiated responsibilities"

5.1. China's emission reduction targets and actions

China has consistently prioritized climate change response and the "common but differentiated responsibilities" principle. In September 2020, during the general debate of the 75th session of the United Nations General Assembly, President Xi Jinping announced: "China will enhance its nationally determined contributions and adopt more robust policies and measures to strive for carbon dioxide emissions to peak before 2030 and achieve carbon neutrality before 2060."

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China is pursuing this goal through multi-level, systematic actions. In the energy sector, it is vigorously expanding non-fossil energy sources, increasing the share of renewable energy, such as solar, wind, and hydropower, in total energy consumption. It is promoting energy structure adjustment to reduce dependence on coal and other fossil fuels, driving energy conservation and emission reduction in industries such as steel, cement, and chemicals, and accelerating the green transformation of industrial sectors. China is also fostering the development of emerging industries such as new energy vehicles and energy-saving environmental protection. In transportation, it is strengthening public transit systems to improve energy efficiency and actively popularizing new energy vehicles.

5.2. Advancing green development and sustainable development strategies

In advancing its sustainable development strategy, China integrates green development principles into the entire process of economic and social progress. Key measures for ecological civilization construction include intensifying environmental protection and restoration, promoting integrated conservation of mountains, waters, forests, farmlands, lakes, grasslands, and deserts, and enhancing the ecosystem carbon sequestration capacity. In resource utilization, it emphasizes conservation and intensive use, while strengthening recycling and improving resource efficiency.

5.3. Role and contribution in international climate cooperation

As a key participant, contributor, and leader in global climate governance, China actively engages in international climate cooperation. In international climate negotiations, China consistently upholds the "common but differentiated responsibilities" principle, adheres to the concepts of fairness, justice, and cooperation, and plays a constructive role in advancing the negotiation process alongside other nations to facilitate significant outcomes such as the Paris Agreement.

China also actively conducts South-South cooperation within its capacity, providing support and assistance to other developing countries to enhance their climate change response capabilities. Such support includes technical assistance, capacity-building training, and material donations. For example, China has established a number of clean energy projects in Africa to help local countries improve their energy structures and reduce greenhouse gas emissions. It has also implemented technical cooperation projects in Southeast Asian countries to strengthen local disaster prevention and mitigation capacities.

6. Recommendations for upholding and strengthening the principle of "common but differentiated responsibilities"

Countries should strengthen climate change cooperation and communication through dialogue and consultation, resolve differences, and jointly promote the effective implementation of the "common but differentiated responsibilities" principle. Developed countries must earnestly fulfill their commitments to take the lead in reducing emissions and provide more support to developing countries in areas such as finance and technology. Developing countries should actively participate in international cooperation, strengthen their own capacity-building, and strive to reduce greenhouse gas emissions. The "common but differentiated responsibilities" principle, which embodies the cornerstone of fairness and justice in global climate governance, has been invigorated by the actions of developing countries such as China, despite existing challenges. International organizations should play a coordinating and facilitating role in technological research and development,

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experience sharing, and policy formulation. They should build exchange and cooperation platforms to help countries jointly address climate change challenges.

Monitoring and evaluation of countries' emission reduction actions should be strengthened to ensure commitment fulfillment, and the implementation mechanisms of the UNFCCC and its related protocols and agreements should be further refined. The specific methods, scale, and schedule for developed countries to increase financial contributions must be clarified, and a fair and reasonable climate finance mechanism should be established. Technology transfer mechanisms should be enhanced to encourage developed countries to transfer advanced low-carbon technologies for climate change response to developing countries. Global technology sharing and innovation cooperation should be promoted, and the international carbon market should be improved to advance the standardization and internationalization of carbon trading through market-based approaches, thereby facilitating the achievement of emission reduction targets.

Developed countries should enhance capacity-building support for developing countries through financial assistance and technical training, helping them improve their research, policy formulation, application, and management capabilities for climate change response. Developing countries themselves must strengthen talent cultivation, raise public awareness of climate change, formulate context-specific strategies and policies, enhance domestic institutional frameworks, and ensure the effective implementation of response actions.

Finally, public awareness of climate change should be heightened, environmental consciousness strengthened, and science communication on climate change intensified. Through diverse educational initiatives, including school programs, community outreach, and media coverage, low-carbon lifestyles should be promoted, encouraging public participation in climate action and widespread dissemination of climate change knowledge. Enterprises must assume social responsibility by actively promoting green production and sustainable development to reduce their own carbon emissions. Governments should formulate relevant policies to guide enterprises in climate change mitigation efforts, fostering a positive atmosphere for collective action and contributing constructively to effective climate change response.

7. Conclusion

The principle of "Common but Differentiated Responsibilities" (CBDR) serves as the cornerstone of equitable global climate governance. Actions by China and other developing nations have strengthened the framework, despite existing challenges. A systematic analysis of the principle's historical context, scientific basis, and practical implementation reveals limitations in comprehensive literature coverage. Future research should explore the applicability of this principle in emerging economies.

The "common but differentiated responsibilities" principle, a cornerstone of global climate governance, embodies the concept of fair, equitable, and sustainable development. It is a vital driver of the international community's effective response to climate change. The steadfast commitment and proactive actions of developing countries have infused this principle with robust vitality, despite challenges and deviations from it by some developed nations in practice. As the largest developing country, China has consistently upheld this principle in areas such as emissions reduction initiatives and international cooperation on green development. It has made outstanding contributions to global climate governance and set a model for other countries. Moving forward, global climate governance must further strengthen international cooperation, improve governance mechanisms, enhance capacity-building in developing countries, and raise public awareness to collectively uphold and reinforce the "common but differentiated responsibilitie" principle, guiding global climate

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governance toward greater fairness and effectiveness for the benefit of humanity. All nations must enhance international collaboration and refine governance mechanisms to achieve this goal.

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