

COP26: Progress, Challenges, and Outlook

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COP26: Progress, Challenges, and Outlook[✉]

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ABSTRACT

The 26th Conference of the Parties (COP26) to the United Nations Framework Convention on Climate Change (UNFCCC) was held in Glasgow a year later than scheduled, with expected outcomes achieved under a post-pandemic background. Based on the Issue-Actor-Mechanism Framework, this paper systematically evaluates the outcomes achieved at COP26 and analyzes the tendency of post-COP26 climate negotiations. Overall, with the concerted efforts of all parties, COP26 has achieved a balanced and inclusive package of outcomes and concluded six years of negotiations on the Paris Rulebook. It is fair to say that COP26 is another milestone in climate governance following the implementation of the Paris Agreement. Meanwhile, the Glasgow Climate Pact has cemented the consensus on a global commitment to accelerating climate action over the next decade and reached a breakthrough consensus on reducing coal, controlling methane, and halting deforestation. In the post-COP26 era, we still need to take concrete actions to implement the outcomes of the Paris Agreement and the Glasgow Climate Pact, innovate ways to speed up CO₂ emissions reduction, and continue to strive for breakthroughs in important issues such as finance, technology, adaptation, and collaboration. In addition to avoiding the escalation of international conflicts, we need to collectively and properly handle the relationship between energy security, carbon reduction, and development and facilitate the efforts of countries to achieve their Sustainable Development Goals (SDGs), including climate-related goals. China will continue to maintain the existing multilateral mechanisms and processes for climate governance, unremittingly take concrete actions to address climate change, promote a domestic comprehensive green transition and global cooperation on carbon neutrality, and contribute constructively to global climate governance.

Key words: COP26, Glasgow, climate change, Paris Agreement, climate governance

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“The Summit showed the Paris Agreement is working and made progress in key areas.” — COP26 World Leaders Summit –Presidency Summary, 3 November 2021

1. COP26 opened in a new development background

The 26th Conference of the Parties (COP26), originally scheduled for 2020, was postponed to 2021 at Glasgow due to the pandemic. The COVID-19 outbreak triggered a profound reflection within the international community, leading to a deeper understanding of non-traditional security issues. On 9 August 2021, the IPCC released the Working Group I Report of the Sixth Assessment Report (AR6 WG1), in which observations suggest an average temperature rise of 1.09°C between 2011 and 2020 above pre-industrial (1850–1900) levels and that climate change will further increase in all regions in the coming decades (IPCC, 2021). While the pandemic has led to short-term declines in carbon emissions in many countries, this trend is unsustainable in the long run, and a rebound in carbon emissions might occur after the pandemic (Ray et al., 2022). The new global energy crisis has also impeded the post-pandemic green recovery of economies (International Energy Agency, 2021). In this context, COP26 is of particular significance as it took place one year later than scheduled by overcoming

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many difficulties, showing that countries have established a basic consensus on actively fulfilling international conventions and strengthening climate targets and pragmatic actions. As the first COP convened since the United States rejoined the Paris Agreement, COP26 has received considerable attention from all parties. COP26 sought to deliver on climate goals in four areas, namely mitigation, adaptation, finance, and collaboration. Specifically, first, both the global response to climate change and the sum of ambitions were still insufficient. Aside from implementation gaps, all Nationally Determined Contributions (NDCs) still cannot reach the 2°C target (UNEP, 2021a). Second, the issue of adaptation has been receiving increasing attention. Developing countries were very concerned about building infrastructure for adaptation and communicated that it was also important to enhance collaborative governance of biodiversity and climate change response as proposed in the Kunming Declaration. Third, the building capacity for climate governance remained inadequate, especially the huge gap in the widely criticized climate finance commitments. Fourth, since the Paris Agreement Rulebook has not yet been completed, it should be finalized as soon as possible to promote full implementation. The hosts of COP26 communicated extensively in the run-up to the summit and set the core goals and agenda around these four areas. In summary, COP26 had properly set the issues in key areas of global climate governance and promoted important progress in these areas during the summit.

2. COP26 achievements and outcomes

The COPs to the UNFCCC are a major part of global climate governance mechanisms. Based on the Issue-Actor-Mechanism Framework of the global governance system in a new era (Xue and Yu, 2017), this study built a framework for analyzing the achievements at COP26 (see Fig. 1). It argued that COP26 successfully introduced multiple stakeholders to discuss climate issues of common concern and established a series of implementation mechanisms, thus setting a good example of the effective functioning of the global governance system. Ahead of COP, the hosts facilitated related parties to reach a consensus on key issues of global climate governance through plenty of communication^a, paving the way for the conference to be held effectively. During COP26, the hosts set a series of agendas to actively create opportunities for full and effective multi-stakeholder discussions on specific issues. Finally, COP produced a series of governance mechanisms and solutions, including phasing down coal, curtailing deforestation, cutting methane emissions, etc.

It has been argued that the outcomes of COP26 were a step backward from the COP26 goals due to the failure to adhere to the 1.5°C target, use the specific term “phase out coal” in the coal power retirement statement, and reach a consensus on global carbon neutrality by 2050 (Arora and Mishra, 2021). However, the success of COP mainly depends on whether it preserves the existing climate governance system and vigorously advances multilateral climate processes. At COP26, the hosts promoted negotiations and consultations on key issues among various agents at different levels by organizing theme days based on previous summits, negotiations and consultations, and ministerial meetings. The parties also paid attention to driving global climate cooperation using the successful experience of the Paris Agreement, such as pushing forward multilateral processes through bilateral consultations. The U.S.—China Joint Glasgow Declaration on Enhancing Climate Action in the 2020s effectively boosted confidence in global climate governance, promoted multiple agencies, built a consensus on many key issues, and finally reached the Glasgow Climate Pact. A series of implementation alliances and agendas were reached at COP26, including the Glasgow Leaders' Declaration on Forests and Land Use, the Global Methane Pledge, the Statement on International Public Support for the Clean Energy Transition, the Declaration on Accelerating the Transition to 100% Zero-Emission Cars and Vans and the Global Energy Alliance for People and Planet (GEAPP), the Breakthrough Agenda and the Powering Past Coal Alliance, among others. Significant progress has been made in multilateral processes for global climate governance, allowing humanity's response to climate change to eventually keep pace with the worsening global climate crisis (Figueres, 2021). As stated in the COP26 world leaders summit-presidency summary, the Summit showed the Paris Agreement is working and made progress in key areas.

2.1. *COP26 set issues through extensive communication in advance of the summit and learned from the experience of the Paris Agreement in promoting international cooperation, laying a foundation for building consensus*

Stakeholders were engaged in close consultations on multiple issues of interest prior to COP26. For example, China, the US, and the EU held close consultations on bilateral climate cooperation before and during COP26 to better understand their respective positions and key issues of global climate governance, contributing to the consensus on issues. Finally, the hosts set a series of ambitious goals in four major areas based on extensive pre-COP communication. These included securing global-net-zero by mid-century and keeping 1.5°C within reach by phasing out coal, curtailing deforestation, accelerating the production of electric vehicles, making renewable investments, adapting to protect communities and natural habitats—including ecosystem protection and restoration, adaptation to investment, mobilization of finance, collaborative participation by international financial institutions to ensure developed countries receive \$100 billion in climate finance

^a The COP26 President concludes constructive discussions with China on climate action, <https://www.gov.uk/government/news/cop26-president-concludes-constructive-discussions-with-china-on-climate-action>

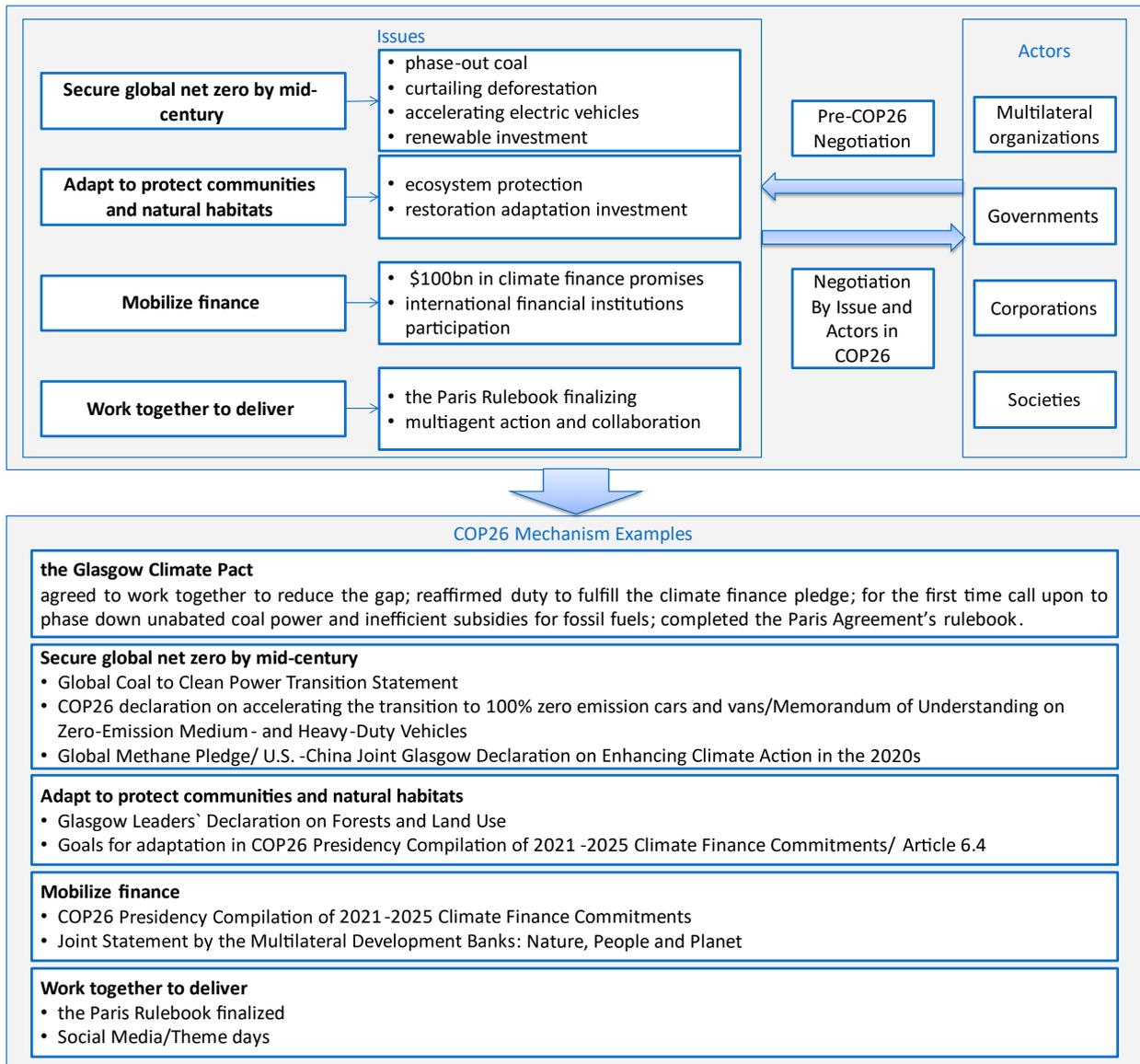


Fig. 1. A review of COP26 achievements under the Issue-Actor-Mechanism Framework.

promises, finalizing the Paris Rulebook, and facilitating multiagency action and collaboration.

2.2. The summit is another milestone in global climate governance following the Paris Agreement; it not only upheld the goals, principles, and policy approaches of the Paris Agreement to achieve a balance between ambition and actions but also laid the institutional and capacity foundation for subsequent global climate governance

The summit achieved certain consensus and progressed in all areas, including mitigation, adaptation, finance, technology transfer, and capacity building. Ahead of COP26, 156 countries had put forth new or updated NDCs in line with their national circumstances, among which 93 set more ambitious NDCs. At COP26, countries such as Thailand, Israel, Vietnam, Nigeria, and India came up with carbon neutrality targets. The Glasgow Climate Pact reiterated the goal of limiting global warming to well below 2°C and aiming for 1.5°C and stressed that achieving 1.5°C would require enhanced emission reduction efforts. As countries collectively launched a Decade of Action for Climate Empowerment, the mantra “actions speak louder than words” became an important trend, including raising ambition, increasing climate finance, strengthening public-private partnerships, and carrying out global stocktakes. COP26 concluded six years of negotiations on the Paris Rulebook. Pragmatic and balanced results were achieved on issues including Articles 6 and 13. A framework for building a global carbon market was established, which mandated that 5% of the revenue from transactions, as outlined in Article 6.4, would be collected and transferred to the Adaptation Foundation and that double-counting would be avoided. The transitional mechanism for the Clean Development Mechanism (CDM) was confirmed, and the enhanced transparency framework referred to in Article

13 was determined.

2.3. COP26 finally reached a breakthrough consensus on the key issues of concern to multiple parties and produced a series of new global climate governance approaches, such as emissions reduction targets, coal phase-out, halting deforestation, methane, and climate finance

The Glasgow Climate Pact stressed that achieving a target of 1.5°C would require a 45% decrease in global CO₂ emissions by 2030 over the 2010 level and confirmed the global stocktake in 2022 through the following steps: 1) proposed for the first time the phasing down of unabated coal power, requiring a reduction of unabated coal power and inefficient fossil fuel subsidies; 2) set a more ambitious climate finance goal despite the risk of failing again, calling for a complete review of the post-2025 new quantitative finance goal in 2024 and doubling the 2019 levels of adaptation finance to parties of developing countries by 2025; 3) decided to establish and immediately launch the 2-year Glasgow-Sharm el Sheikh Work Programme on the Global Goal on Adaptation, to start as soon as possible. Funding through the Santiago Network was arranged to support technical assistance to parties of developing countries to help address and mitigate loss and damages and, at the same time, carry out the “Glasgow Dialogue” concerning the financing mechanism for loss and damage.

Apart from the Glasgow Climate Pact, 23 countries committed to stopping coal use in the Global Coal to Clean Power Transition Statement for the first time. Over 120 countries signed the Glasgow Leaders’ Declaration on Forests and Land Use, aiming to halt and reverse forest loss and land degradation by 2030, supply funds, and make 75% of forest commodity supply chains sustainable. Over 100 countries signed the Global Methane Pledge to reduce methane emissions by 30% by 2030; although China did not sign the pledge, it made a methane reduction commitment in the U.S.-China Joint Glasgow Declaration on Enhancing Climate Action in the 2020s.

2.4. COP26 provided innovative issue-oriented discussion opportunities for multiple agencies to mobilize stakeholders and actors actively participating in global climate governance

Before and during COP26, many businesses, industrial associations, banking institutions, and other non-governmental agents and actors were actively engaged in sectoral climate governance discussions, with clear and concrete global climate governance targets and established pathways. For example, the COP26 Declaration on Accelerating the Transition to 100% Zero-Emission Cars and Vans proposed zero emissions for all new car and van sales by 2040 globally and by 2035 in leading markets. A similar Memorandum of Understanding (MOU) was signed for medium- and heavy-duty vehicles, namely the Memorandum of Understanding on Zero-Emission Medium- and Heavy-Duty Vehicles, aiming for 30% and 100% net zero-emission vehicles by 2030 and 2040, respectively. The COP 26 Declaration—International Aviation Climate Ambition Coalition— proposed to achieve net-zero CO₂ emissions from aviation by 2050. Multilateral development banks pledged in the Joint Statement by the Multilateral Development Banks: Nature, People, and Planet to promote the mainstreaming of nature issues in policies, analyses, assessment, suggestions, investments, and operations.

As shown in Fig. 1, COP26 is a classic example of the Issue-Actor-Mechanism Framework theory for global governance, which set a series of governance issues in response to multiagency concerns, and made progress in addressing key issues referred to in the Paris Agreement, such as mitigation, adaptation, finance, technology, and capacity building. Various venues, including theme days, the world leaders summit, ministerial consultations, and negotiations provided conditions for full discussion and consensus-building on the climate governance agenda to multiple related agencies throughout the conference. Eventually, COP26 established a series of multilateral mechanisms, finalized the Paris Rulebook, left unresolved by COP25, and mentioned coal phase-down for the first time. With the aim of keeping 1.5°C alive, COP26 further clarified Global Stocktake, transparency, and other guarantee mechanisms and strengthened the scope and intensity of current climate governance (UNEP, 2021b). Therefore, COP26 successfully championed and implemented the Paris Agreement, ensuring the effectiveness of the UNFCCC-based international multilateral governance system for addressing climate change and advancing the process of global climate governance. In this way, COP26 represented another milestone in global climate governance following the Paris Agreement.

3. Post-COP26 challenges and outlook

With the pandemic still raging and the international geopolitical environment becoming more complex and even worsening, climate change is gradually affecting the socioeconomic system as a whole; thus, our climate governance requires more resilient global system thinking and reforms (D’Orazio, 2021). COPs have effectively driven consensus among countries, but there are still many disagreements and issues that need to be resolved through concerted efforts. Given the inadequate implementation of concrete actions, a lack of cooperation on tough issues, the possibility of exacerbating conflicts when tackling climate change, the dependence on fossil fuels, energy security and energy poverty, and insufficient synergies between addressing climate change and other areas, countries should adopt a pragmatic mindset, reach constructive consensus in

time and take tangible actions.

3.1. *Taking concrete actions to actively tackle the climate crisis will become a mainstream direction with an urgent need for the active and systematic multiagency engagement in climate governance*

Boosting climate ambition is important, but action is far more valuable than goals (Watts, 2021). Countries should extensively explore a wide range of issues, such as raising global climate ambitions, establishing non-CO₂ greenhouse gas (GHG) controls, and coordinating climate governance with an open mind. However, achieving the Paris Agreement goals requires more actions than words, so countries urgently need to take concrete actions (Xinhua, 2021). Developed countries, in particular, need to fulfill their climate action targets and climate finance commitments to prevent these targets and commitments from failing again (Roberts et al., 2021) while avoiding rule-of-law uncertainties in addressing climate change. Concrete actions entail active social and multiagency engagement. Countries need to mobilize the participation of multiple agencies in climate governance in the light of their national circumstances to establish green production and consumption systems, explore best practices to promote active multiagency participation in economic and social transition, and to provide a reference for developing countries to address climate change.

3.2. *Through global climate cooperation, countries should have the courage to tackle tough problems and strive to make progress in the implementation path for addressing climate change and core emission reduction issues*

The agenda for future climate cooperation should not circumvent difficulties but focus on key issues and key links. Current climate cooperation presents two easy-hard relationships: first, it is hard to reach a consensus on the implementation path and concrete actions for addressing climate change, including finance and technology, among interested parties, while it is easy for them to agree on the ambition to tackle climate change. Second, it is hard to build a consensus on core issues regarding reducing CO₂ emissions in response to climate change. At the same time, it is easy to agree on non-CO₂ emissions reduction, including methane emissions reduction and curbing deforestation. Moreover, there is an urgent need to achieve consensus on building a sustainable supply chain based on the fundamental reality of the global supply chain to clarify the goals and pathways toward a sustainable supply chain based on the premise of win-win cooperation. It is important to acknowledge that all related issues can potentially contribute to addressing climate change, but only raising ambition without clarifying the implementation path, or merely promoting non-CO₂ emissions reduction without tackling tough CO₂-related issues, will make it difficult to establish effective climate governance. Therefore, countries should strengthen communication and cooperation and tough issues.

3.3. *International cooperation and competition should not jeopardize climate change response, and the implementation of carbon pricing and financing mechanisms should avoid exacerbating international conflicts*

Considering that climate change has always been a major threat to the survival of mankind and that the international political and economic situation is becoming increasingly confrontational, promoting international political and economic cooperation is indeed conducive to the fight against climate change (Paroussos et al., 2019). Countries should take responsible actions, strengthen communication and cooperation and avoid misjudgments to ensure both competition and cooperation are beneficial rather than detrimental in addressing climate change. In the process of building a global carbon pricing mechanism, we should fully respect the differences in national circumstances and set up carbon pricing and financing mechanisms with the goal of driving the green and low-carbon structural transformation of trade and financial systems rather than setting green barriers. A one-size-fits-all approach to promoting carbon pricing, financing mechanisms, and a standards system is likely to undermine the interests of developing countries and their willingness and ability to participate in the fight against climate change (Eicke et al., 2021). Countries should work together to step up efforts to deal with the changes in carbon pricing and financing mechanisms and design an implementation mechanism, taking into account the differences unique to their national transition, to avoid further conflicts, uncertainties, and damage to international cooperation on climate change.

3.4. *While different countries are at different stages of energy transition, they should join hands to balance energy security, carbon reduction, and development*

Given different development stages and resource endowments, not every country adopts the same timeline and path for low-carbon energy transition (Safari et al., 2019). However, there is no doubt that the process of low-carbon energy transition will not be smooth for both developed and developing countries. The new global energy crisis, which began in the first half of 2021 along with soaring prices of fossil fuels like natural gas and coal, may significantly affect how governments choose policy pathways in terms of energy security and addressing climate change (Gilbert et al., 2021; Shaffer, 2021), bringing new uncertainties to the low-carbon global energy transition, while fully demonstrating how a low-carbon energy transition is an arduous and complex undertaking. While the developmental stage and transition pathways may vary from country to country based on national circumstances, balancing energy security, carbon reduction, and economic development is a common challenge for all countries. There is room for mutual learning from solutions and technical roadmaps. A successful phase-out of coal requires new development models, policy measures, and cooperative efforts (Kalkuhl et al., 2019; Cui et al.,

2021). European and American countries will have to phase down oil and gas simultaneously. Developed countries have a responsibility to work with developing countries to explore low-carbon energy development strategies for retiring coal and gas, creating an opportunity for a global response to climate change and deeper climate cooperation (Miyamoto and Takeuchi, 2019).

3.5. Countries should enhance their adaptability to climate change and strengthen their coordinated governance of climate change in many areas, including biodiversity

As climate risks grow, it has become increasingly necessary for countries to work together to enhance their adaptability to climate change and strive to balance mitigation and adaptation. Financial consideration is an unavoidable issue in the process. At COP26, developed countries raised their ambitions regarding financial support but might fall short again in affecting the bigger picture of global climate governance. Regarding climate finance, the developing world is showing increasingly strong demand for a higher share of adaptation finance (Chapagain et al., 2020). COP26 increased discussions on related issues such as curbing deforestation, establishing sustainable supply chains and biodiversity conservation programs, and promoting synergies among issues across multiple areas. An important direction for future multilateral climate and environmental processes is facilitating positive progress in SDGs, including climate-related ones. It is expected that discussions on the coordinated governance of climate change will be strengthened in the second part of the Convention on Biological Diversity (CBD) COP15. COP27 will be hosted by Egypt, a developing country, where issues such as adaptation to climate change and reduction of loss and damage will be priorities of discussion. Sharm el Sheikh, formerly the venue of CBD COP14, is expected to be a meeting point for the coordinated governance of biodiversity and climate change and to witness greater synergistic processes between biodiversity conservation and addressing climate change at COP27.

4. China will actively safeguard and participate in climate governance through concrete actions

As China's President XI Jinping emphasized in his remarks at the COP26 World Leaders Summit, "successful governance relies on solid action", China believes that actions speak louder than words in the global response to climate change. China has incorporated carbon dioxide peaking and carbon neutrality goals into the overall national strategy and the five-sphere integrated plan and will work unswervingly to achieve the goals and promote green transformation on all fronts. In the run-up to COP26, China issued, in succession, the Guidelines of the Central Committee of the CPC and the State Council on Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy^b, and the Action Plan for Carbon Dioxide Peaking Before 2030^c. A white paper entitled "Responding to Climate Change: China's Policies and Actions" submits China's Achievements, New Goals and New Measures for Nationally Determined Contributions. And a report named China's Mid-Century Long-Term Low Greenhouse Gas Development Strategy is published as well. These documents clarified the overall thinking and roadmap for China's carbon dioxide peaking before 2030 and achieving carbon neutrality before 2060 (Sun, 2022). China is now stepping up its efforts to improve the 1 + N policy system, which will eventually be a system of national and local policies and measures for both carbon dioxide peaking and carbon neutrality in all sectors and industries. The 1 + N policy system will provide comprehensive support for China to achieve carbon dioxide peaking and carbon neutrality goals by specifying the targets, pathways, and policies and finally become a Chinese solution to carbon dioxide peaking and carbon neutrality (CAS-SDG, 2021; Liu, 2021).

China firmly champions and safeguards the multilateral mechanisms and processes for climate governance and attaches importance to cooperation with the international community to tackle the global climate crisis and promote global cooperation on carbon neutrality. The UNFCCC Secretariat, UK Presidency, United States, European Union, and other countries had close consultations prior to and at COP26. As always, China supports and upholds the UNFCCC and the Paris Agreement, keeps to the goals, principles, and policy approaches of the Paris Agreement to achieve a balance between ambition and action, and stands ready to play a positive role in the cooperation on climate change and adopt systematic solutions to climate change. Meanwhile, China has pledged to cease building new coal-fired power projects abroad and pledges to step up support for other developing countries in developing green and low-carbon energy. Moving forward, China will actively engage in green BRI projects and South-South cooperation to help developing countries address climate change.

China attaches importance to inheriting the successful experience of the Paris Agreement and promoting multilateral governance processes through bilateral cooperation, with breakthroughs made in bilateral climate cooperation with the US at Glasgow. In 2021, the two countries held more than 31 intensive climate talks and communication, laying the foundation for releasing the U.S.-China Joint Glasgow Declaration on Enhancing Climate Action in the 2020s during COP26. The two reached an important consensus on four areas based on the China-U.S. Joint Statement Addressing the Climate Crisis in April 2021, including enhancing climate action, working together to make COP26 a success, actively implementing the

^b Full Text: http://english.www.gov.cn/policies/latestreleases/202110/25/content_WS61760047c6d0df57f98e3c21.html

^c Full Text: http://english.www.gov.cn/policies/latestreleases/202110/27/content_WS6178a47ec6d0df57f98e3dfb.html

Joint Declaration, establishing a working group on enhancing climate change in the 2020s, releasing the U.S.—China Joint Glasgow Declaration on Enhancing Climate Action in the 2020s, expediting the implementation of China—U.S. climate cooperation and contributing to the formation of consensus on the Glasgow Climate Pact. China will continue to actively engage in dialogue with the EU, US, and other economies on climate cooperation through bilateral mechanisms and achieve a series of positive results.

China will continue to work on creating synergies from the coordinated governance of climate change and promote the combination of climate governance with other issues. China places emphasis on integrating climate change response into the transformation of its economic and social systems, with a focus on expediting the development of industrial structures, production modes, living patterns, and spatial zones that will conserve resources and protect the environment, build its economic and social development upon green transition, and adhere to the coordinated promotion of carbon reduction, pollution reduction, green transition, and growth. The coordinated governance of climate and the environment will also be a priority, and the synergies between pollution abatement and carbon reduction should be further promoted. At the same time, China should combine climate and biodiversity governance and facilitate synergies to be achieved in addressing climate change in the second part of CBD COP15.

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REFERENCES

- Arora, N. K., and I. Mishra, 2021: COP26: More challenges than achievements. *Environmental Sustainability*, **4**, 585–588, <https://doi.org/10.1007/s42398-021-00212-7>.
- Chapagain, D., F. Baarsch, M. Schaeffer, and S. D'Haen, 2020: Climate change adaptation costs in developing countries: Insights from existing estimates. *Climate and Development*, **12**, 934–942, <https://doi.org/10.1080/17565529.2020.1711698>.
- Chinese Academy of Sciences' Sustainable Development Strategy Study Group (CAS-SDG), 2021: *China Sustainable Development Report 2020 – Exploring Pathways Towards Carbon Neutrality*. Science Press. (in Chinese)
- Cui, R. Y., and Coauthors, 2021: A plant-by-plant strategy for high-ambition coal power Phase-out in China. *Nature Communications*, **12**, 1468, <https://doi.org/10.1038/s41467-021-21786-0>.
- D'Orazio, P., 2021: Towards a post-pandemic policy framework to manage climate-related financial risks and resilience. *Climate Policy*, **21**, 1368–1382, <https://doi.org/10.1080/14693062.2021.1975623>.
- Eicke, L., S. Weko, M. Apergi, and A. Marian, 2021: Pulling up the carbon ladder? Decarbonization, dependence, and third-country risks from the European carbon border adjustment mechanism. *Energy Research & Social Science*, **80**, 102240, <https://doi.org/10.1016/j.erss.2021.102240>.
- Figueres, C., 2021: Cop26 took us one step closer to combating the climate crisis. The Guardian. [Available online from <https://www.carbonbrief.org/daily-brief/coal-shares-lose-ground-after-glasgow-climate-deal>].
- Gilbert, A., M. D. Bazilian, and S. Gross, 2021: The emerging global natural gas market and the energy crisis of 2021–2022. [Available online from <https://payneinstitute.mines.edu/the-emerging-global-natural-gas-market-and-the-energy-crisis-of-2021-2022/>].
- International Energy Agency, 2021: World Energy Outlook 2021. [Available online from <https://www.iea.org/reports/world-energy-outlook-2021>].
- IPCC, 2021: *Climate Change 2021: The Physical Science Basis. Working Group I Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.
- Kalkuhl, M., J. C. Steckel, L. Montrone, M. Jakob, J. Peters, and O. Edenhofer, 2019: Successful coal phase-out requires new models of development. *Nature Energy*, **4**, 897–900, <https://doi.org/10.1038/s41560-019-0500-5>.
- Liu, H. Q., 2021: The carbon brief interview: Prof Wang Yi and Prof Wang Zhongying. Carbon Brief. [Available online from <https://www.carbonbrief.org/the-carbon-brief-interview-prof-wang-yi-and-prof-wang-zhongying>].
- Miyamoto, M., and K. Takeuchi, 2019: Climate agreement and technology diffusion: Impact of the Kyoto Protocol on international patent applications for renewable energy technologies. *Energy Policy*, **129**, 1331–1338, <https://doi.org/10.1016/j.enpol.2019.02.053>.
- Paroussos, L., A. Mandel, K. Fragkiadakis, P. Fragkos, J. Hinkel, and Z. Vrontisi, 2019: Climate clubs and the macro-economic benefits of international cooperation on climate policy. *Nature Climate Change*, **9**, 542–546, <https://doi.org/10.1038/s41558-019-0501-1>.
- Ray, R. L., V. P. Singh, S. K. Singh, B. S. Acharya, and Y. P. He, 2022: What is the impact of COVID-19 pandemic on global carbon emissions. *Science of The Total Environment*, **816**, 151503, <https://doi.org/10.1016/j.scitotenv.2021.151503>.
- Roberts, J. T., R. Weikmans, S.-A. Robinson, D. Ciolet, M. Khan, and D. Falzon, 2021: Rebooting a failed promise of climate finance. *Nature Climate Change*, **11**, 180–182, <https://doi.org/10.1038/s41558-021-00990-2>.
- Safari, A., N. Das, O. Langhelle, J. Roy, and M. Assadi, 2019: Natural gas: A transition fuel for sustainable energy system transformation. *Energy Science & Engineering*, **7**, 1075–1094, <https://doi.org/10.1002/ese3.380>.
- Shaffer, S., 2021: Is Europe's energy crisis a preview of America's? [Available online from https://www.realclearworld.com/2021/10/06/is_europes_energy_crisis_a_preview_of_americas_797650.html].
- Sun, J., 2022: One more step forward along the long journey: On the UN climate change conference in Glasgow. [Available online from <http://www.cpifa.org/en/cms/book/349>].

- UNEP, 2021a: Emissions gap report 2021. [Available online from <https://www.unep.org/resources/emissions-gap-report-2021>].
- UNEP, 2021b: COP26 ends with agreement but falls short on climate action. UNEP. [Available online from <https://www.unep.org/news-and-stories/story/cop26-ends-agreement-falls-short-climate-action>].
- Watts, J., 2021: China calls for concrete action not distant targets in last week of Cop26. The Guardian. [Available online from <https://greeninstitute.ng/blog1/china-calls-for-concrete-action-not-distant-targets-in-last-week-of-cop26>].
- Xinhua, 2021: Interview: Cooperation, delivery crucial in tackling climate change, says head of Chinese delegation to COP26. Xinhua. [Available online from http://www.news.cn/english/2021-11/13/c_1310307725.htm].
- Xue, L., and H. Z. Yu, 2017: Towards a public management paradigm for global governance: An analysis based on an issue-actor-mechanism framework. *Social Sciences in China*, **38**, 26–45, <https://doi.org/10.1080/02529203.2017.1268362>.