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China Aspires to be an Environmental Leader: How Should the Rest of the World Engage?

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Abstract

China has transformed from a laggard to a rising leader of environmental governance. It plays a unique and essential role in promoting environmental cooperation, financing and

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implementing global green infrastructure, and generating and disseminating environmental technology and scientific knowledge. On each front, global progress cannot be made without China, especially with the US' retreat from global leadership under the second Trump presidency. In this article, we consider China's concrete, multifaceted environmental efforts over the last decade and show China's various motives: it is partly responding to critiques of its massive environmental footprint; partly pursuing greater respect as a responsible global power; and partly seeking economic and political gains through clean energy transition, a greener planet, and a more stable climate. We call for new approaches to engaging China's aspiration to become a global environmental leader, while asserting clear expectations and responsibilities in that role.

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Keywords
China, global leadership, environment, climate change

Introduction

China is now a major player in global environmental governance. It has dramatically reversed its domestic environmental record through strengthened pollution control and biodiversity protection measures (Greenstone et al., 2021). It has also become the world's largest investor in renewable energy and dominates global cleantech supply chains (Douhy, 2024; IEA, 2024). On the international stage, China led the successful negotiation of the Kunming-Montreal Global Biodiversity Framework and is a keen promoter of international climate cooperation (Mouterde, 2022; Qi and Dauvergne, 2022). The country has also created various governance initiatives to green its overseas engagements (Harlan and Lu, 2022; Sun et al., 2023; Sun and Yu, 2023). Through South–South cooperation, China has financed and delivered a growing number of environmental- and climate-related projects in the Global South to support capacity building, technology transfer, and scientific cooperation (Harlan and Lu, 2022; Liu et al., 2024). All such evidence suggests that China is transforming itself from a laggard to a rising leader in global environmental governance.

Responses to China's nascent leadership within the global environmental policy community range from supportive to dismissive to concerned. Supporters see China's efforts as welcome and necessary to achieve global sustainability goals, pointing to China's own accomplishments in reducing pollution, conserving nature, and encouraging green technological innovation. Yet others question whether China can serve as a responsible leader in multilateral environmental institutions, given the internal tensions in its domestic environmental governance. Scholars such as Huang (2020) highlight how China's environmental reforms remain constrained by authoritarian structures and fragmented implementation, while Li and Shapiro (2020) describe the country's "coercive environmentalism"

as producing impressive short-term gains but raising doubts about transparency, public participation, and long-term sustainability. Some observers, therefore, dismiss China's claims to leadership as attempts to "greenwash" its global reputation through opaque and self-serving environmental initiatives, while continuing to invest in fossil fuels and support polluting industries (e.g. Wang and Ramachandran, 2025). Others see China's support for sustainability transitions in other countries as a geoeconomic strategy to dominate clean energy supply chains and ensure the world's dependency on Chinese technologies, in effect challenging the post-Cold War world order (e.g. Doshi, 2021). Such concerns have gained traction from Washington to Brussels, where a growing emphasis on geopolitical competition and supply chain risks has led to increasingly securitised engagement with China, including efforts to address global environmental challenges.

Our analysis shows that a combative and competitive stance towards China's environmental leadership aspirations is both misguided and counterproductive. The evidence indicates that Chinese policymakers – like those in many countries – increasingly view environmental issues as integral to economic development, political stability, and international standing. China's engagement with global environmental governance reflects both concern over domestic impacts of environmental crises and an aspiration to be seen as a responsible global power. These efforts are complex and multifaceted, involving a wide range of state and non-state actors whose interests do not always neatly align with central government directives. Our analysis further reveals that Chinese clean technologies, policy innovations, and scientific expertise are already contributing to sustainability transitions in many countries, especially across the Global South, where they fill important gaps in finance, capacity, and technology transfer.

China's support for global sustainability governance is particularly critical today, given the US' anti-climate and anti-environmental policies under the second presidency of Donald Trump. We recognise that China's support for climate and environmental actions across the globe is inseparable from its broader political and economic ambitions, including goals around energy security, trade expansion, technological self-reliance, and influence over global governance norms. The question is how to harness the entanglement of these issues to facilitate rather than obstruct environmental progress. A clear-eyed but constructive approach is therefore essential. Rather than dismiss or disparage China's global environmental efforts, policymakers and practitioners around the world should critically engage and, where appropriate, collaborate with China to address planetary crises. At the same time, Chinese actors need to make more effort to share their technologies with the rest of the world and ensure their overseas activities align with the needs of host countries.

Based on the existing literature and evidence, our analysis focuses on three domains of China's emerging environmental leadership that may offer opportunities for constructive engagement: (1) multilateral institution-building, (2) greening infrastructure investment, and (3) scientific collaboration and knowledge exchange. We then make policy recommendations for different audiences on possible ways to engage with China for accelerating global sustainability transition.

Assessing China's Rising Leadership in Global Environmental Governance

China's Changing Role in Multilateral Institutions

While China historically played a relatively minor role in the creation of major multilateral environmental agreements (MEAs) until the early first decade of the twenty-first century, it has become increasingly active in driving international environmental cooperation over the last decade (for a review, see Li et al., 2024). China occupies a unique position straddling the developing and developed worlds: it represents developing nations through the coalition of Group of Seventy-Seven and China (G77 and China) while wielding significant economic and technological capabilities as the world's second-largest economy. This position has made China instrumental in brokering MEAs and building coalitions between developing and developed countries.

China's engagement in multilateral institution-building to address climate change exemplifies its changing role in multilateral environmental governance. In 2009, when the international community failed to develop a legally binding treaty in Copenhagen, observers blamed China for "wrecking" the negotiations due to its rejection of any binding emission reduction targets (Lynas, 2009). However, China's position in multilateral climate negotiations has been shaped by its longstanding emphasis on the principle of "common but differentiated responsibility" (CBDR) and its defence of developing countries' right to development (Stalley, 2013). While continuously advocating the CBDR, since Copenhagen, China has been instrumental in the negotiations leading to the Paris Agreement, closely cooperating with the US on key treaty design issues and leading coordination among developing countries through the G77 and China and BASIC (Brazil, South Africa, India and China) groups to achieve consensus in 2015 in Paris (Allan et al., 2021; Xie, 2021).

In the post-Paris era, China's commitment to climate action and its support for international climate cooperation have grown more pronounced, particularly in the context of the US' retreat from climate action since 2016 (Hilton, 2016; Hilton and Kerr, 2017). China has more actively shaped new agendas (e.g. nature-based solutions and global land degradation neutrality) while supporting capacity building and technology transfer in developing countries (Qi and Dauvergne, 2022; Zhu et al., 2024). Although China has no obligation under the United Nations Framework Convention on Climate Change to provide climate finance to others, it established a "South–South Climate Cooperation Fund" with a pledge of CNY 20 billion (approximately US$3.1 billion), and according to the Chinese government, the fund has delivered more than CNY 1.2 billion as of December 2023 (Xinhua, 2023). At COP29 in November 2024, Chinese Vice Premier Ding Xuexiang reported that the country has provided and mobilised more than CNY 177 billion (approximately US$24.5 billion) between 2016 and 2023 to support climate action in developing countries (Xinhua, 2024). This figure, in line with several studies, places China as the world's fifth-largest donor of climate finance (Liu et al., 2024; Liu et al., 2025).

However, China's contributions have not been delivered without issue. Research has shown that China's climate finance to the Global South has been primarily provided through bilateral channels in the form of non-concessional loans – an approach that has drawn criticism for advancing China's strategic and commercial interests (Logan, 2024). And although some recipient countries have welcomed Chinese climate finance as better aligned with their development needs than traditional Western aid, often with no conditions attached, the accessibility and quality of data on China's international climate finance remain poor enough that it invites critique and suspicion (Moore, 2024). For example, the Chinese government never explained the methodology used to calculate these figures, nor has it developed a transparent system to regularly report its climate finance contributions (Logan, 2024). More open disclosure and external monitoring of the implementation of China's climate finance is needed and would help to translate China's contributions into more positive global recognition.

China's leadership ambition in multilateral environmental cooperation is also evident in other arenas. China held the presidency of the fifteenth meeting of the Conference of the Parties to the Convention on Biological Diversity (COP15) in 2021–2022. Despite tense disagreements on the draft text, the Chinese presidency managed to successfully conclude the negotiations for a new global biodiversity framework specifying goals for 2050 and targets for 2030 (Mouterde, 2022; Rodenbiker, 2023a). Moreover, as president, the Chinese government pledged a new RMB 1.5 billion (approximately US$210 million) Kunming Biodiversity Fund in 2021 to support biodiversity protection in the Global South. Operated by the United Nations Environment Programme, the fund has approved twenty-two projects in thirty-four countries as of October 2025. China was also among the few countries to submit its revised national biodiversity strategy implementing the post-2020 Biodiversity framework in time for COP16 in 2024, a concrete demonstration of China's support of international biodiversity governance.

In summary, over the past three decades, China has emerged as a significant actor in global environmental governance. In contrast to the US, which has withdrawn from the Paris Agreement and rejected the 2030 Agenda and the Sustainable Development Goals (Segal, 2025), China has demonstrated a degree of policy continuity for advancing sustainable development both domestically and internationally. This positions China to play a highly influential role in shaping the future of global sustainability governance. As MEA negotiations move forward across different issues – including efforts to finalise an international treaty on plastic pollution (Cater, 2025) and anticipated post-2030 Agenda discussions from 2027 – China's active contributions will be essential. At the same time, China's pursuit of environmental leadership is closely tied to its broader diplomatic strategy, including its articulation of great power diplomacy (大国外交, *da guo wai jiao*) and emphasis on great power responsibility (大国担当, *da guo dan dang*) (Kopra, 2019). Recognising these aspirations, the international community should critically engage with China's contributions to global climate and environmental actions, encourage transparency and accountability, and support deeper collaboration for multilateral institution-building.

Greening China's Infrastructure Investments

China possesses tremendous capacity to help developing countries scale up sustainable infrastructure development. With the global infrastructure funding gap projected to reach US$15 trillion by 2040 (GI Hub and Oxford Economics, 2017), China's Belt and Road Initiative (BRI) has already financed development projects worth US$1.175 trillion across the globe since it was launched in 2013, including US$704 billion in construction contracts especially in the energy and transport sectors (Nedopil, 2025). This far eclipses the US$30 billion pledged by all G7 countries and the Biden Administration's Partnership for Global Infrastructure and Investment. However, China's overseas investments have faced mounting criticism and pushback for their costly environmental damage and negative socio-economic impacts on host countries (Ascensão et al., 2018; DiCarlo and Bachrach, 2025). Recognising the need to manage these impacts and improve the BRI's reputation, the Chinese government has enacted many efforts to promote green development of the BRI (Coenen et al., 2021; Harlan, 2021; MEP et al., 2017).

Acknowledging this policy shift, we argue that some of China's most notable environmental contributions overseas to date have emerged from efforts to green the BRI. Starting in 2017, the Chinese government launched a campaign for greening the BRI not only to bolster China's international image but also to enhance the effectiveness of its overseas development programme as demonstrated by the guidance co-issued by five key ministries overseeing China's overseas activities (MEP et al., 2017). This initiative has catalysed a range of activities by different government agencies and non-state actors aimed at integrating environmental considerations into their planning and implementation of BRI activities (Sun and Yu, 2023). Although early guidelines lacked clear enforcement measures, a subsequent gradual formalisation of green BRI policy frameworks has progressed. A major signal came in 2021, when President Xi Jinping announced that China would cease financing for new coal-fired power plants overseas (Wang et al., 2024). Although the pledge did not cover all types of coal projects financed by China, in three years, it has resulted in the cancellation of 42.8 gigawatts of coal projects, avoiding 4.5 billion tons of carbon emissions (Nesan, 2024).

In 2022, four central government agencies – the National Development and Reform Commission, Ministry of Foreign Affairs, Ministry of Ecology and Environment, and Ministry of Commerce – co-issued a new high-level directive on the green BRI stating that projects must be aligned with the Paris Agreement and the green BRI should be established by 2030 (NDRC et al., 2022). To meet these targets, Chinese firms are now encouraged to abide by international or higher Chinese environmental standards, beyond simply meeting host country requirements as stipulated in the new guidelines for ecological protection of foreign investment cooperation and construction projects issued by the MEE and MOFCOM in 2022 (MEE and MOFCOM, 2022). In the same year, the China Banking and Insurance Regulatory Commission (CBIRC) issued new green finance guidelines, which require Chinese financial institutions to strengthen environmental, social and governance risk management of overseas investments, especially

through alignment with international standards and good practices (CBIRC, 2022). While these actions are largely non-mandatory and their implementation remains challenging and may be piecemeal, they reflect a discernible shift of the central government towards more structured and sustainability-oriented policy guidance for BRI projects.

These changes are increasingly evident in the composition and delivery of China's overseas investments. The share of solar and wind energy projects in China's overseas energy portfolio has grown from less than 5 per cent in 2013 to over 30 per cent in 2025 (Nedopil, 2025). China now plays a significant role in financing and constructing renewable projects overseas, leveraging its dominant position in global cleantech supply chains. Cleantech industries – especially solar, batteries, and electric vehicles (EVs) now referred to as "the new three" (新三样, *xin san yang*) – have become central to China's domestic economic strategy, and Chinese companies increasingly view overseas investments as opportunities to expand new markets and build supply chain resilience (Myllyvirta et al., 2025).

As the BRI enters its second decade, the Chinese government has also begun to shift overseas financing from mega-infrastructure projects to "small yet smart" (小而美, *xiao er mei*) projects aimed at reducing financial risks and delivering more tangible benefits to local communities (Xinhua, 2023). The Chinese government's rationale for this shift is to reduce "wasteful" investments in projects that host countries do not need and cannot afford, and increase private finance to greener projects that are fit-for-purpose (Ray, 2023). This is an important shift towards greening Chinese overseas engagement. For many BRI host countries, this evolution creates potential opportunities for accelerating low-carbon development by investing in clean energy, providing low-cost green technologies, and actively working to reduce the impacts of large-scale renewable infrastructure (De Kluiver, 2024; Gu and Renge, 2025). These efforts are especially critical given the retreat from infrastructure financing from traditional donors, especially the US.

Nonetheless, significant challenges remain. Many host governments lack the capacity to effectively negotiate, monitor, and enforce social and environmental safeguards, while many Chinese firms lack experience in consulting local stakeholders, mitigating environmental damage, and involving communities in project decision-making (Coenen et al., 2021; Harlan, 2021). These gaps raise important concerns about transparency, accountability, and long-term project sustainability, and there is growing recognition – both within China and internationally – that these are areas where constructive engagement is needed (Sun et al., 2023). Platforms such as the Belt and Road International Green Development Coalition, established by China's Ministry of Ecology and Environment, provide a space for Chinese and international stakeholders to exchange information and experiences on green development (Geng and Lo, 2023). While such initiatives are still developing, they reflect efforts to institutionalise greener practices and broaden stakeholder involvement. In April 2025, President Xi reaffirmed China's commitment to climate action and South–South cooperation (MFA, 2025). In this context, international actors are likely to find opportunities to continue and strengthen cooperation with Chinese state and non-state actors to further green China's overseas engagement.

Scientific Collaboration and Knowledge Exchange

China has become a powerhouse for technological innovation. From 2000 to 2020, while the US share of global Research & Development (R&D) spending decreased from 40 per cent to 30 per cent, that of China increased from 5 per cent to 24 per cent (Blevins and Sutter, 2024). These investments have been strategically focused on the clean energy and green technological sectors. China now manufactures more than 80 per cent of all solar photovoltaics (PVs) and batteries, and more than 60 per cent of all wind turbines globally, helping to drive down the cost of renewables significantly over the past decade (Douhy, 2024; IEA, 2023). China is also a world leader in grid technology, including ultra-high voltage transmission and smart grids, and has built the world's largest EV industry and market (Kelter, 2024; You, 2024).

China's strong R&D capacity has underpinned a broad expansion of scientific cooperation and knowledge exchange on clean technologies with the Global South. Some of this activity builds on decades-long programmes and projects in specific sectors – such as agriculture – that now emphasise environmental dimensions (Harlan and Lu, 2022). Other initiatives are more recent and centre on emerging green industries like solar PVs, where China holds a dominant market position (Jackson et al., 2021), as well as policies and techniques for promoting conservation, afforestation, and other nature-based solutions (Weins et al., 2023; Zhu et al., 2024). While the Chinese government frames these initiatives as "mutual learning," they often involve unidirectional flows of expertise from Chinese institutions to their Global South counterparts, underscoring technological and knowledge asymmetries between China and its Global South partners.

An array of Chinese institutions and actors is involved in organising and delivering scientific and technological cooperation. The Ministry of Science and Technology leads bilateral science and technology agreements, with 114 signed in 2020 (Wagner and Simon, 2023), more than any other country. These often include green topics such as environmental protection, natural resources, oceans, meteorology, earth sciences and agriculture. The Chinese Academy of Sciences, a state-affiliated research institute, plays a key role in implementing these agreements by hosting networks and projects and collaborating with state agencies and universities in other countries. Some central state ministries, particularly the Ministry of Ecology and Environment and National Development and Reform Commission, have established their own centers and programmes (e.g. the China–ASEAN Environmental Cooperation Center and the Action Plan for Green Technology Development in Central Asia) that focus on knowledge sharing and joint research on issues like conservation and climate change (Harlan and Lu, 2022). Similar international programmes have also been established by local governments across China.

Many Chinese non-state actors – including non-governmental organisations (NGOs) and companies – have also created new platforms for knowledge exchange. Examples include a China–Africa Forest Governance Learning Platform and community-based mangrove restoration partnerships between Chinese and Indonesian NGOs (Rodenbiker, 2023a). Similarly, Chinese state-owned and private companies are

unveiling and expanding scientific collaboration, though focused less on data sharing and more on training and capacity building to expand their international market. For example, LONGi, China's largest solar manufacturing company, announced a "Lighting up Africa" project in 2023 to provide solar products and training for off-grid rural communities in sub-Saharan Africa (LONGi, 2024).

Undoubtedly, diplomatic and geopolitical motivations lie behind many of these initiatives. The Chinese government may seek to shape environmental governance norms in line with China's own approach – one built on state-led, technocratic models that emphasise large-scale and long-term environmental control and optimisation – while advancing commercial interests of Chinese businesses. Although this approach can support rapid infrastructure development and ecological protection, scholars have shown how it can downplay local participation, distributive equity, and social impacts – often leading to adverse effects on marginalised communities (DiCarlo, 2024; Li and Shapiro, 2020; Rodenbiker, 2023b). At the same time, different Chinese actors have their own, disparate motivations for engaging in scientific collaboration and knowledge exchange. Chinese businesses seek Global South markets for their products and services that scientific cooperation and exchange can potentially facilitate. Chinese scientists and researchers aim to expand their international networks to amplify their scholarship and gain prestige. And Chinese NGOs want to expand their work overseas, in part due to growing limits on the actions of civil society within China. This constellation of actors and incentives offers an opportunity for international engagement on specific issues of shared concern.

Hence, other countries can still draw on China's knowledge and learn, in a critical way, from Chinese experiences in order to design pathways to sustainability transitions that fit their own contexts. As environmental and climate science is now in peril in the US due to the second Trump administration's restrictions, China is poised to lead research and innovation on green technologies globally. Considering this trend, scientific collaboration and knowledge exchange between China and the rest of the world likely make significant contributions to technology transfer and capacity building, which can drive the global net-zero transition.

Conclusion

China's aspirations to take on a leadership role in global environmental governance should be acknowledged and encouraged, especially in an era where the US is stepping back from its international environmental commitments. To be a global environmental leader, China should take more ambitious action both domestically and internationally, and increase transparency and accountability of its green investment and cooperation initiatives (Sun, 2025). But the country's desire to lead in some areas and the diversity of actors involved mean that international engagement and collaboration are both possible and essential. Better benefit-sharing and accountability mechanisms in cooperation with China are imperative to accelerating global sustainability transitions. Until now, China has primarily used its dominance in cleantech supply chains to advance its own economic interests, but to better support international partners, it needs to share more

technologies and add more value across borders to support its international partners (Hale and Sun, 2025). While questioning the state-led, top-down nature of China's environmental governance and cooperation is pivotal, such criticisms will be better received when China's valid claims to being a solution provider for the world are well acknowledged.

Collaborating with China is therefore essential for creating pathways to generate economic opportunities for other countries through their green transitions. Protectionist measures and containment, such as adding high tariffs on cleantech products from China or suspending collaboration with Chinese research and development entities under claims of threats to national security, only misdirect and hinder these goals. To accelerate and succeed in the sustainability transition, the global community should make space for China's contributions as a rising environmental leader, while holding it accountable to high standards and leveraging its experiences and resources equitably in that role.

We conclude with recommendations to help policymakers and stakeholders strategically engage with China to accelerate a more just global sustainability transition. First, policymakers worldwide should build on and expand government-to-government engagement in the environmental realm with China, including at both central and subnational levels. This includes reinforcing initiatives such as the European Union–China High-level Environment and Climate Dialogue, subnational cooperation such as the California–China Climate Institute, and multilateral cooperation such as negotiating a strong international treaty on plastic pollution. Rather than viewing China solely as a competitor, development actors in the Global North should work with Chinese state and non-state entities to strengthen environmental governance, align standards, and share best practices. At the same time, countries cooperating with China on cleantech should identify pathways with their Chinese partners to address legitimate concerns associated with insufficient technology transfer and supply chain dependencies. Global North states should be more transparent and consistent, such as through multilateral institutions, in defining rules regarding export controls, investment screening, and environmental standards in ways that safeguard security without undermining shared climate and environmental goals. Such balanced and transparent engagement with China is essential to preserve environmental cooperation in an increasingly securitised political environment.

Second, policymakers in the Global South should strategically leverage Chinese capital and technologies while managing risks and ensuring equitable outcomes. On the one hand, this means maximising benefits from engagement with China, such as obtaining Chinese investments, technologies, and expertise. On the other hand, this means designing investment and infrastructure agreements that include transparency clauses, local participation requirements, and independent monitoring and grievance mechanisms to manage environmental and social impacts. Countries should also strengthen domestic institutions to negotiate on equal footing with Chinese financiers and firms and to enforce accountability and benefit-sharing mechanisms. Host governments can also convene multi-stakeholder platforms – bringing together civil society, local communities, and Chinese investors – to co-design projects and mediate concerns during implementation. Such steps can ensure that engagement is mutually beneficial and that the gains are equitably distributed to local communities.

Third, the global environmental policy community must reaffirm the value of international research collaboration and knowledge sharing in developing solutions to global ecological crises. This includes renewing and making full use of China's numerous science and technology agreements, while building transparent and reciprocal frameworks for joint research. Scientific knowledge, technical expertise and green technologies should be treated as global public goods, not as instruments of geopolitical competition. Yet, many universities and research institutes in Europe and North America have suspended exchanges with China and discouraged collaboration with Chinese partners. Reinvigorating these exchanges and protecting environmental research from politicisation is essential for addressing shared planetary challenges.

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Author Contributions

Tyler Harlan, Yixian Sun and Juliet Lu led the conceptualisation and writing of the paper, and Tyler Harlan and Yixian Sun are jointly the first authors. All other co-authors reviewed the draft and provided their inputs. Their names are ordered alphabetically.

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