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Achieving Environmental Justice: The Role of Climate Finance and International Cooperation between Developed and Developing Countries

By Chenghuai Xu

I. GLOBAL CLIMATE-RELATED RISKS AND ENVIRONMENTAL JUSTICE

A. Climate-Related Risks Between Developing and Developed Countries

Climate change has become one of the most urgent challenges of our time. It not only has direct physical impacts on nature but also causes damage to socio-economic life. For example, research shows that the baseline predictions for once-in-a-century extreme weather events are highest in the coastal and southern regions of the United States. With a 2°C and 4°C increase in temperature, these events could double or triple, while over 37% of major farmland will face years of drought risk.³⁷⁷ Climate change can also affect financial stability through an increase in physical risk in the form of weather and climate severity and long-term impacts and a disorderly transition to a net zero economy.³⁷⁸ According to the Intergovernmental Panel on Climate Change (IPCC), if global warming exceeds 1.5°C before stabilizing at 1.5°C by 2100, some impacts may be long-lasting or irreversible, such as the loss of some ecosystems.³⁷⁹ Indeed, the economic consequences of climate change will be at least as bad as the 2008-9 financial crisis.³⁸⁰ As global temperatures rise and extreme weather events become more frequent, developing countries, particularly Small Island Developing States (SIDS), have long been recognized as some of the most vulnerable regions to climate change. These areas face significantly greater climate threats compared to developed nations, especially in terms of rising sea levels and coastal extremes.³⁸¹ With such huge potential losses and impacts, the international community has become increasingly aware of climate-related risks.

However, developing and developed countries have differing approaches to addressing climate-related risks. Developed nations have accumulated over 150 years of wealth through the use of fossil fuels and advanced technologies, while developing countries are still struggling to overcome poverty and combat diseases as they work to grow their economies. This disparity may ultimately deprive future generations of equal access to Earth's resources.³⁸² Developed countries bear a long-standing historical responsibility for the carbon

³⁷⁷ Saiful Haque Rahat et al., “Bracing for Impact: How Shifting Precipitation Extremes May Influence Physical Climate Risks in an Uncertain Future,” *Scientific Reports* 14, no. 1 (July 29, 2024), 17398, <https://doi.org/10.1038/s41598-024-65618-9>.

³⁷⁸ Seraina Grünwald, “Climate-Related Risks: Is the Macroprudential Framework Fit for Purpose?,” *Journal of International Banking & Financial Law* 36, no. 11 (December 2021), 743.

³⁷⁹ Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.), “Summary for Policymakers — Global Warming of 1.5 °C” (Cambridge University Press: Intergovernmental Panel on Climate Change (IPCC), 2018), <https://www.ipcc.ch/sr15/chapter/spm/>.

³⁸⁰ Barnali Choudhury, “Climate Change as Systemic Risk,” *Berkeley Business Law Journal* 18, no. 2 (2021), 52–93.

³⁸¹ Michalis I. Voudoukas et al., “Small Island Developing States under Threat by Rising Seas Even in a 1.5 °C Warming World,” *Nature Sustainability* 6, no. 12 (December 2023), 1552–64, <https://doi.org/10.1038/s41893-023-01230-5>.

³⁸² Jennifer Huang, “Climate Justice: Climate Justice and the Paris Agreement,” *Journal of Animal & Environmental Law* 9, no. 1 (2018 2017), 23–59.

accumulation in the atmosphere, which is largely the result of their heavy reliance on industrialization to achieve economic growth and prosperity.³⁸³ However, developing countries recognize that industrialization is also necessary for their growth, which inevitably leads to greenhouse gas emissions. Therefore, they advocate for a fair distribution of responsibilities for emissions reduction, while developed countries push for an equal distribution of these obligations.³⁸⁴ The challenge of achieving a balance between economic development and adapting to and mitigating climate change risks has raised issues of environmental justice between developed and developing countries.

B. Environmental Justice Between Developed and Developing Countries

Before delving deeper into the environmental justice issues between developing and developed countries, it is essential to understand the concept of environmental justice and its historical development. Historically, as the multifaceted challenges posed by climate-related risks have unfolded, regions across the globe have been affected to varying degrees, with vulnerable groups and communities often bearing the brunt of these impacts. Amidst this, the environmental justice movement began to take shape, first emerging in the United States. On February 11, 1968, the Memphis Sanitation Strike marked the start of the environmental justice movement. This was the first nationwide movement led by African Americans to demand fair wages and better working conditions for sanitation workers, highlighting the fight against environmental injustice.³⁸⁵ Since then, people, particularly communities of color, low-income neighborhoods, and other marginalized groups, have increasingly become aware of issues related to environmental injustice and the need for environmental justice.

As the environmental justice movement has gained momentum, the definition and types of environmental justice have remained diverse, with no single, universally accepted concept. Different groups define it from varying perspectives, leading to multiple discussions on the types of justice involved. For instance, the concept of environmental justice initially focused on environmental racism, specifically addressing the unequal distribution of environmental issues in communities of color and low-income neighborhoods.³⁸⁶ Later, scholars began to explore justice from different angles. Vicki Been discussed fairness in distribution patterns, efficiency, and procedures, coining the term distributive justice.³⁸⁷ Alice Kaswan examined political justice within the environmental justice movement, which refers to fairness in decision-making processes.³⁸⁸ Robert R. Kuehn connected social justice with environmentalism, emphasizing social justice across race, ethnicity, culture,

³⁸³ Md. Kamal Uddin, "Climate Change and Global Environmental Politics: North-South Divide Global Law and Policy Developments: Climate Change," *Environmental Policy and Law* 47, no. 3–4 (2017), 106–14.

³⁸⁴ *Ibid.*

³⁸⁵ Uddin (n 7).

³⁸⁶ David Schlosberg, "1 Defining Environmental Justice," in *Defining Environmental Justice: Theories, Movements, and Nature*, ed. David Schlosberg (Oxford University Press, 2007), 3–10, <https://doi.org/10.1093/acprof:oso/9780199286294.003.0001>.

³⁸⁷ Vicki Been, "What's Fairness Got to Do with It? Environmental Justice and the Siting of Locally Undesirable Land Uses," *Cornell Law Review* 78, no. 6 (1993 1992), 1001–85.

³⁸⁸ Alice Kaswan, "Distributive Justice and the Environment," *North Carolina Law Review* 81, no. 3 (2003 2002), 1045.

livelihood, and economic aspects.³⁸⁹ Daniel Bertram highlighted the importance of

intergenerational equity in the context of climate change, noting that the relationship between generations should follow a form of equal distribution.³⁹⁰ He outlined four main principles: (i) the principle of true intergenerational equity, (ii) the principle of sustainable development, (iii) the precautionary principle, and (iv) the rights of future generations. Building on these numerous academic and practical discussions, government agencies have also attempted to define environmental justice. For example, the U.S. Environmental Protection Agency (EPA) defines environmental justice as the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, in the development, implementation, and enforcement of environmental laws, regulations, and policies.

Environmental justice emerged from various movements and has acquired different meanings due to the diverse perspectives of its stakeholders. However, its common thread is the call for equal and fair treatment of different races and communities in legal and political decision-making, distribution processes, and related procedures concerning environmental issues. The rise and development of the environmental justice movement have brought global attention to the racial, economic, and other forms of inequality related to climate and environmental issues. Over the years, the framework of environmental justice has gradually expanded in different regions. Although it originated in the United States, the concept quickly spread to other countries, raising global concerns.³⁹¹

Who is ultimately responsible for the environmental justice issues stemming from climate change? Whether developed countries are obligated to help developing nations cope with the effects of climate change has been a key point of debate among countries and organizations in recent years. This debate touches on issues of distributive justice. For example, although the United States is not among the countries most severely affected by climate change, it is expected to take greater action in reducing greenhouse gas emissions due to its significant contribution to current emission levels.³⁹² At the same time, the Global North—comprising primarily developed nations—has not adequately shared the technologies and resources with the Global South, i.e., developing countries, which would allow these nations to both accumulate wealth and combat climate change. This imbalance creates issues of inequality and justice, especially as developing countries, while still working to grow their economies, are disproportionately burdened by climate-induced poverty and natural disasters. As the global community shares the same planet, climate change caused by developed nations' early industrialization and wealth accumulation has harmed economically and technologically disadvantaged developing nations. This inequality has given rise to environmental justice issues between developed and developing countries.

³⁸⁹ Robert R. Kuehn, "A Taxonomy of Environmental Justice," *Environmental Law Reporter News & Analysis* 30, no. 9 (2000), 10681–703.

³⁹⁰ Daniel Bertram, "'For You Will (Still) Be Here Tomorrow': The Many Lives of Intergenerational Equity," *Transnational Environmental Law* 12, no. 1 (March 2023), 121–49, <https://doi.org/10.1017/S2047102522000395>.

³⁹¹ David Schlosberg and Lisette B. Collins, "From Environmental to Climate Justice: Climate Change and the Discourse of Environmental Justice," *WIREs Climate Change* 5, no. 3 (2014), 359–74, <https://doi.org/10.1002/wcc.275>.

³⁹² Eric A. Posner and Cass R. Sunstein, "Climate Change Justice," *Georgetown Law Journal* 96, no. 5 (2008 2007): 1565–1612.

To address climate-related risks while enabling both developed and developing countries to accumulate wealth and achieve fairness and justice, the global community has recognized the need for substantial financial support to realize environmental justice. On the one hand, developed countries, while continuing to build their wealth, require funding to fulfill their commitments to help developing nations tackle climate change risks. On the other hand, developing countries, in addition to addressing domestic challenges like poverty and technological gaps, need even more financial resources to cope with climate-related risks. The question of how to balance economic development with the need to address climate risks, while properly handling the environmental justice issues between developing and developed nations, has garnered widespread attention from the international community. As a result, climate finance has rapidly gained importance and momentum.

II. CLIMATE FINANCE BETWEEN DEVELOPING AND DEVELOPED COUNTRIES

A. The Failure of International Treaties and the Development of Climate Finance

The emergence and development of climate finance fundamentally reflect the process of negotiation over rights and obligations between developed and developing countries in their joint efforts to address climate change. To adapt to and mitigate the effects of climate change, nations have put forward their respective needs based on their unique circumstances, seeking adherence to specific conditions and rules by signatories of international treaties. In this context, the concept of climate finance gradually emerged, evolving into one of the primary tools for combating climate change. However, instead of serving as an effective instrument to balance environmental justice between developed and developing countries, climate finance has repeatedly faced obstacles in the implementation of various international treaties.

Early legal discussions on climate change primarily focused on international cooperation and fairness between developed and developing countries from the perspective of international law. Harro van Asselt and others argued that because climate change impacts a wide range of socio-economic and environmental sectors, addressing it involves complex issues and international collaboration, situating climate change governance within a broad framework of international law.³⁹³ Edith Brown Weiss emphasized that international climate change law embodies fairness in dealing with both current and future generations as well as between nations in addressing climate change.³⁹⁴ The adoption of the 1992 United Nations Framework Convention on Climate Change (UNFCCC) marked the beginning of international cooperation among governments to tackle climate change. David Hunter noted that although the UNFCCC established a broad framework for international climate governance, it did not set binding targets or timelines for reducing greenhouse gas emissions.³⁹⁵ The 1997 Kyoto

³⁹³ Harro Van Asselt, Francesco Sindico, and Michael A. Mehling, "Global Climate Change and the Fragmentation of International Law," *Law & Policy* 30, no. 4 (2008), 423–49, <https://doi.org/10.1111/j.1467-9930.2008.00286.x>.

³⁹⁴ Edith Brown Weiss, "Climate Change, Intergenerational Equity, and International Law," *Vermont Journal of Environmental Law* 9, no. 3 (2008 2007), 615–28.

³⁹⁵ David Hunter, "Implications of the Copenhagen Accord for Global Climate Governance," *Sustainable Development Law & Policy* 10, Copyright © The Author(s) CC BY 4.0

Protocol was the world's first legally binding treaty to reduce greenhouse gas emissions, setting a target of a 5%

reduction by industrialized nations by 2008–2012.³⁹⁶ However, Rafael Leal-Arcas critiqued the Kyoto Protocol for failing to reach international agreement on emission limits and timelines for developing countries, which undermined its effectiveness.³⁹⁷ Despite introducing the concept of emissions trading, Petra Lea Láncoš pointed out that the so-called strict mechanisms of the protocol lacked real legal enforcement, as parties could simply choose to withdraw without significant consequences.³⁹⁸ To address these shortcomings, the 2007 Bali Road Map built on earlier treaties, establishing sustainable and actionable goals, particularly with regard to developing countries' commitments to Nationally Appropriate Mitigation Actions (NAMAs).³⁹⁹ Wolfgang Sterk and others recognized the challenges developing nations faced in creating financing mechanisms for climate mitigation and adaptation, while also acknowledging Bali as one of the most successful climate negotiations at the time.⁴⁰⁰ The 2009 Copenhagen Conference sought to build on Bali by negotiating further, setting a goal to limit global temperature rise to 2°C and obligating developed countries to provide billions in funding to developing nations.⁴⁰¹ However, Lin Feng and Jason Buhi criticized the Copenhagen Accord for lacking substantive content and legal force, noting that the "polluter pays" principle required further discussion.⁴⁰² They recommended that both developed and developing countries set aside adversarial positions and embrace international cooperation to combat climate change. Following the perceived failure of the Copenhagen Accord, attention shifted to the 2010 Cancun Climate Change Conference. The Cancun Agreement introduced financial and technological support plans to help developing countries with mitigation and adaptation efforts, including the creation of the Green Climate Fund.⁴⁰³ However, Robert O'Sullivan and others noted that the Cancun Conference left unanswered questions regarding the legal enforceability of countries' commitments to mitigation, the required amount of funding for the Green Climate Fund, and the extent of financial support for developing countries' participation in climate change efforts.⁴⁰⁴ Climate finance saw some development through the aforementioned international treaties. However, due to ambiguities around legal obligations and enforcement, as well as the unclear scope of financial commitments, climate finance has not reached its full potential.

no. 2 (January 1, 2010), 4–15.

³⁹⁶ Kyoto Protocol to the United Nations Framework Convention on Climate Change (adopted 11 December 1997, entered into force 16 February 2005) 2303 UNTS 162.

³⁹⁷ Rafael Leal-Arcas, "Kyoto and the COPs: Lessons Learned and Looking Ahead," *Hague Yearbook of International Law / Annuaire de La Haye de Droit International*, Vol. 23 (2010), October 28, 2011, 17–90, https://doi.org/10.1163/9789004244689_003.

³⁹⁸ Petra Lea Láncoš, "Flexibility and Legitimacy - The Emissions Trading System under the Kyoto Protocol," *German Law Journal* 9, no. 11 (November 2008), 1625–51, <https://doi.org/10.1017/S2071832200000602>.

³⁹⁹ Conference of the Parties Decision on the agreed outcome pursuant to the Bali Action Plan (United Nations Framework Convention on Climate Change [UNFCCC]) COP Decision 1/CP.18, UN Doc FCCC/CP/2012/8/Add.1, p.3.

⁴⁰⁰ Wolfgang Sterk et al., "The Bali Roadmap for Global Climate Policy—New Horizons and Old Pitfalls," *Journal for European Environmental & Planning Law* 5, no. 2 (January 1, 2008), 139–58, <https://doi.org/10.1163/161372708X324169>.

⁴⁰¹ Conference of the Parties Decision on the Copenhagen Accord (Conference of the Parties [COP]) COP Decision 2/CP.15, UN Doc FCCC/CP/2009/11/Add.1, p.4, UN Doc FCCC/CP/2009/L.7.

⁴⁰² Lin Feng and Jason Buhi, "The Copenhagen Accord and the Silent Incorporation of the Polluter Pays Principle in International Climate Law: An Analysis of Sino-American Diplomacy at Copenhagen and Beyond," *Buffalo Environmental Law Journal* 18, no. 1 (2011 2010), 1–74.

⁴⁰³ *Ibid.*

⁴⁰⁴ Charlotte Streck et al., "The Results and Relevance of the Cancun Climate Conference," *Journal for European Environmental and Planning Law* 8, no. 2 (October 22, 2024), 165–88, <https://doi.org/10.1163/187601011X576214>.

The 2015 Paris Agreement elevated climate finance to new heights. Article 2 of the Paris Agreement set the goal of keeping the global average temperature increase well below 2°C above pre-industrial levels, while striving to limit it to 1.5°C.⁴⁰⁵ Additionally, it called for financial flows to support climate change adaptation and mitigation, thus providing a clear target for the development of climate finance. Michael Mehling noted that the source of climate finance stems from Article 9 of the Paris Agreement, which obligates developed countries to provide financial support to developing nations.⁴⁰⁶ By granting the Paris Agreement legal force through the UNFCCC, countries were obligated to fulfill their climate responsibilities, addressing issues that previous treaties had left unresolved, such as clear emission reduction targets, timelines, and differentiated responsibilities for developed and developing nations. The lack of binding emission reduction targets and insufficient funding for developing countries to adapt to climate change are among the reasons why the Paris Agreement has flaws.⁴⁰⁷

The 2021 Glasgow Climate Pact marked further progress in addressing climate finance. It facilitated a significant commitment from 450 companies across 45 countries through the Glasgow Financial Alliance for Net Zero (GFANZ), aiming to direct \$130 trillion in climate-related assets.⁴⁰⁸ The Glasgow Climate Pact achieved a degree of success by not only enhancing countries' commitments to climate action but also indirectly encouraging greater private sector involvement in climate finance. Subsequently, COP 27 made the scope of climate finance more concrete by establishing the Loss and Damage Fund, which has been hailed as a milestone for environmental justice.⁴⁰⁹ The concept of loss and damage was first introduced in 2013 with the creation of the Warsaw International Mechanism for Loss and Damage (WIM).⁴¹⁰ WIM was designed to provide financial support to developing countries that are disproportionately affected by climate change, addressing the losses and damages that cannot be mitigated or adapted to. However, WIM's signatories did not establish the necessary legal frameworks or policies to implement these measures, leaving responsibility for loss and damage unclear.⁴¹¹ This issue is particularly problematic for low-lying Small Island Developing States (SIDS), which face the existential threat of submersion due to sea-level rise caused by anthropogenic global warming.⁴¹² These countries lack sufficient international legal protections and resources to support either adaptation or relocation,

⁴⁰⁵ Paris Agreement (adopted 12 December 2015, entered into force 4 November 2016) art2.

⁴⁰⁶ Michael Mehling, "ARTICLE 9: FINANCE," in *THE PARIS AGREEMENT ON CLIMATE CHANGE*, Elgar Commentaries Series (Edward Elgar, 2021), https://www.elgaronline.com/view/edcoll/9781788979184/17_article9.xhtml.

⁴⁰⁷ Kiran Satish, "The Paris Agreement: A Critical Analysis," *International Journal of Law Management & Humanities* 4 Issue 1 (2021), 1840–48.

⁴⁰⁸ Marie-Claire Cordonier Segger, "Climate Law and Public Policy Innovation for the Sustainable Development Goals: Accelerating Post-COP26 Compliance," *Bennett Institute for Public Policy* (blog), December 1, 2021, <https://www.bennettinstitute.cam.ac.uk/blog/climate-law-cop26/>.

⁴⁰⁹ Arthur Wyns, "COP27 Establishes Loss and Damage Fund to Respond to Human Cost of Climate Change," *The Lancet Planetary Health* 7, no. 1 (January 1, 2023), e21–22, [https://doi.org/10.1016/S2542-5196\(22\)00331-X](https://doi.org/10.1016/S2542-5196(22)00331-X).

⁴¹⁰ UNFCCC Secretariat, *Report of the Conference of the Parties on Its Eighteenth Session, Held in Doha from 26 November to 8 December 2012. Addendum. Part Two: Action Taken by the Conference of the Parties at Its Eighteenth Session*, U.N. Doc. FCCC/CP/2012/8/Add.1 (Feb. 28, 2013).

⁴¹¹ Meinhard Doelle, "The Birth of the Warsaw Loss & Damage Mechanism," *Carbon & Climate Law Review* 8, no. 1 (2014), 35–45.

⁴¹² Sam Adelman, "Climate Justice, Loss and Damage and Compensation for Small Island Developing States" 7, no. 1 (March 1, 2016), 32–53, <https://doi.org/10.4337/jhre.2016.01.02>.

which raises significant justice and moral concerns.⁴¹³ Although the Paris Agreement established WIM as a permanent institution, its effective operation has been hindered by unresolved questions regarding the responsibility for loss and damage, as well as the source of funding.⁴¹⁴ At COP 27 in Egypt in 2022, a significant breakthrough was made with the formal arrangement and agreement to establish the Loss and Damage Fund under the Paris Agreement. While the COP 27 agreement highlighted the need for an annual investment of \$4 to \$6 trillion in renewable energy by 2030 to achieve net-zero emissions by 2050, key questions remained, such as who should contribute to the fund and how the money would be used.⁴¹⁵

In recent years, countries have continued to sign various international treaties to mobilize climate finance. Despite numerous efforts, as discussed earlier, the challenges of treaty enforcement and the lack of effective oversight mean that non-compliance by signatories often carries minimal consequences. Nevertheless, the impacts of climate change on nations persist, and issues of environmental justice continue to emerge. To address this, the paper proposes leveraging green bonds—a key climate finance instrument—to promote environmental justice and encourage proactive participation from both the public and private sectors in the development of climate finance.

III. GREEN BONDS AND ENVIRONMENTAL JUSTICE

A. Overview of green bonds

Green bonds share similarities and differences with traditional bonds. A bond is a fixed-income instrument designed to bridge a financing gap.⁴¹⁶ Colin Bamford notes that the term "bond" is broadly used to refer to all obligations and instruments representing long-term debt, which are traded between investors throughout the period from their issuance to their redemption deadlines.⁴¹⁷ Philip Wood categorizes bonds into three main types: sovereign bonds, bank bonds, and corporate bonds, facilitated by a prospectus that allows issuers and investors to enter into subscription agreements. Green bonds, a specific type of bond, differ in that they are specifically issued to fund green or climate-related activities. The definition of a green bond is a debt security issued to raise capital for climate-related or environmental projects.⁴¹⁸ In green bonds, issuers typically designate the proceeds for specific climate or environmental projects, signaling their intentions to investors. The issuers of green bonds often include sovereign states, banks, and corporations. Therefore, while green bonds and traditional bonds are largely similar in structure, the primary difference lies in the purpose of the funds raised—green bonds are issued

⁴¹³ Veera Pekkarinen, Patrick Toussaint, and Harro van Asselt, "Loss and Damage after Paris: Moving Beyond Rhetoric," *Carbon & Climate Law Review* 13, no. 1 (2019), 31–49, <https://doi.org/10.21552/cclr/2019/1/6>.

⁴¹⁴ Mircea M. Dutu-Buzura, "International Governance of Climate Change. From the Framework Convention (1992) to COP-27 (2022)," *Law Review*, no. 02 (2022), 158–77.

⁴¹⁵ UNEP, "COP27 Ends with Announcement of Historic Loss and Damage Fund," November 22, 2022, <https://www.unep.org/news-and-stories/story/cop27-ends-announcement-historic-loss-and-damage-fund>.

⁴¹⁶ Thiam Hee Ng and Jacqueline Yujia Tao, "Bond Financing for Renewable Energy in Asia," *Energy Policy* 95 (August 1, 2016), 509–17, <https://doi.org/10.1016/j.enpol.2016.03.015>.

⁴¹⁷ Colin Bamford, "The Legal Nature of the International Bond Market," in *Principles of International Financial Law*, ed. Colin Bamford, 3rd ed. (Oxford University Press, 2019), 155–84, <https://doi.org/10.1093/law/9780198832713.003.0006>.

⁴¹⁸ Scott Breen and Catherine Campbell, "Legal Considerations for a Skyrocketing Green Bond Market," *Natural Resources & Environment* 31, no. 3 (2017 2016), 16–20.

to finance green projects, whereas traditional bonds lack such a specific focus.

The World Bank and the European Investment Bank (EIB) were early issuers of green bonds, driven by European public pension funds' growing interest in sustainable investments.⁴¹⁹ The EIB issued the world's first green bond in 2007.⁴²⁰ Since then, the green bond market has grown rapidly, with total issuances reaching US\$389 billion by 2018.⁴²¹ Although the issuance of green bonds continued to rise after 2018, despite the impact of COVID-19, the Climate Bonds Initiative (CBI) predicts that the annual issuance of green bonds could exceed US\$1 trillion by 2023.⁴²² According to the latest report from CBI, global green bonds set a new quarterly record in 2024, amassing USD 195.9 billion in the first few months of the year.⁴²³

B. Green Bonds and Environment Justice

Green bonds, as a new financing tool, have seen rapid global development due to their unique focus on raising funds for environmental purposes. Despite the bond market's vast potential, the financial markets are still dominated by credit and securities, which explains the limited academic research on green bonds. This author proposes an innovative approach: using green bonds to address environmental justice between developed and developing countries, based on the integration of existing discussions on green bonds and environmental justice. The author finds that green bonds can play a crucial role in achieving global environmental justice through the framework of procedural justice, distributive justice, and intergenerational justice. It is important to note that environmental justice encompasses not only the relationship between developed and developing countries but also justice within each country.

Procedural justice in environmental justice refers to ensuring that all communities, particularly marginalized ones disproportionately affected by pollution, have a fair and meaningful role in environmental decision-making.⁴²⁴ On a global scale, developing countries have limited or even restricted influence in global financial market decision-making. However, the process of issuing green bonds can effectively practice procedural justice. First, green bonds offer high transparency in their issuance process. Green bonds are regulated by two voluntary frameworks: the Green Bond Principles (GBP) published by the International Capital Market Association and the Climate Bonds Initiative. GBP is structured around four core components: the use of proceeds for green projects, project evaluation and selection, use of proceeds tracking, and reporting. This means that the issuance of green bonds involves strict transparency regarding the use of funds and project selection. Regular reporting and disclosure requirements provide investors with an opportunity to participate in

⁴¹⁹ Mehreen Sheikh and Alexia Kelly, "Launch of the Global Green Bond Partnership," Text/HTML, World Bank, September 13, 2018, <https://www.worldbank.org/en/news/press-release/2018/09/13/launch-of-the-global-green-bond-partnership>.

⁴²⁰ *Ibid.*

⁴²¹ Climate Bonds Initiative, "Green Bonds: The State of the Market 2018," March 6, 2019, <https://www.climatebonds.net/resources/reports/green-bonds-state-market-2018>.

⁴²² Climate Bonds Initiative, "2021 Green Forecast Updated to Half a Trillion – Latest H1 Figures Signal New Surge in Global Green, Social & Sustainability Investment," Climate Bonds Initiative, August 31, 2021, <https://www.climatebonds.net/2021/08/climate-bonds-updates-2021-green-forecast-half-trillion-latest-h1-figures-signal-new-surge>.

⁴²³ Climate Bonds Initiative, "A Record Start to the Year for Sustainable Debt," Climate Bonds Initiative, June 20, 2024, <https://www.climatebonds.net/2024/06/record-start-year-sustainable-debt>.

⁴²⁴ Jonathan Skinner-Thompson, "Procedural Environmental Justice," *Washington Law Review* 97, no. 2 (2022), 399–458.

monitoring, ensuring fairness.⁴²⁵ According to the latest regulations, 100% of the proceeds must be used for green projects, making it easier for all parties to monitor and evaluate these projects.

Distributive justice is one of the most frequently discussed topics when addressing climate-related risks between developed and developing countries. Climate change exacerbates poverty, reduces agricultural productivity, and limits the ability of developing nations to adapt to and mitigate climate impacts.⁴²⁶ As previously mentioned, developed countries bear historical responsibility for global climate change due to their industrial emissions and have reaped significant economic benefits through the accumulation of capital. As such, developed nations are expected to provide financial, technological, and institutional support to developing countries for climate change adaptation and mitigation. However, with limited public funding and weak enforcement of international treaties, private sector participation becomes crucial for achieving climate finance and distributive justice between developed and developing nations. Green bonds provide an excellent option for the private sector. From the investors' perspective, green bonds are an attractive investment opportunity, offering relatively low risks under favorable policies and government incentives, coupled with the increasing demand from environmentally conscious investors.⁴²⁷ From the issuers' perspective, green bonds expand the pool of investors interested in climate-related opportunities and can form part of their fixed-income allocation.⁴²⁸ This allows issuers to expand their revenues by issuing green bonds. Consequently, the private sector is actively participating in the global green bond market. Moreover, the selection of green projects, a prerequisite for issuing green bonds, directly contributes to distributive justice. For instance, the European Union's EU Taxonomy Regulation plays a critical role in determining whether an economic activity is environmentally sustainable. Article 9 of the EU Taxonomy Regulation outlines environmental objectives, while Article 3 defines criteria for environmentally sustainable economic activities. These objectives guide the flow of capital toward projects that promote sustainability and environmental improvement, helping to alleviate the environmental burdens on vulnerable populations and thus advancing distributive justice.

Green bonds also contribute to intergenerational justice. Companies that issue green bonds can enhance long-term value and operational performance.⁴²⁹ The projects funded by green bonds, such as green infrastructure, clean technology, and renewable energy, are long-term sustainability initiatives. These projects not only mitigate and adapt to climate change but also lay the foundation for sustainable infrastructure for future generations. Once

⁴²⁵ Luke Trompeter, "Green Is Good: How Green Bonds Cultivated into Wall Street's Environmental Paradox," *Sustainable Development Law & Policy* 17, no. 2 (2017), 4–11.

⁴²⁶ Temesgen Abebe Degu, "What Obligations Do Developed Countries Have to Assist Developing Countries in Adapting to and Mitigating Global Warming?," *Open Journal for Legal Studies (OJLS)* 5, no. 1 (2022), 19–30.

⁴²⁷ Boqiang Lin and Tong Su, "Green Bond vs Conventional Bond: Outline the Rationale behind Issuance Choices in China," *International Review of Financial Analysis* 81 (May 1, 2022), 102063, <https://doi.org/10.1016/j.irfa.2022.102063>.

⁴²⁸ Juan Piñeiro-Chousa et al., "The Influence of Investor Sentiment on the Green Bond Market," *Technological Forecasting and Social Change* 162 (January 1, 2021), 120351, <https://doi.org/10.1016/j.techfore.2020.120351>.

⁴²⁹ Caroline Flammer, "Corporate Green Bonds," *Journal of Financial Economics* 142, no. 2 (November 1, 2021), 499–516, <https://doi.org/10.1016/j.jfineco.2021.01.010>.

these green bonds projects are completed, their environmental benefits are verified, contributing to sustainable development and providing future generations with the opportunity to enjoy a

healthy environment and access to sustainable resources.

IV. CONCLUSION

Green bonds, as an innovative tool in climate finance, offer more efficient and direct advantages in addressing environmental justice issues between developing and developed countries compared to international treaties. They not only incentivize public and private sector participation in the development of climate finance and international cooperation but also promote environmental justice in terms of distributive, procedural, and intergenerational dimensions. Although the primary regulatory challenge for green bonds is greenwashing, which refers to false or misleading claims about the environmental benefits of products, brands, or corporate practices.⁴³⁰ However, stricter and more transparent disclosure regulations worldwide have supported the rapid growth of green bonds. Meanwhile, resolving environmental justice issues cannot rely solely on financial market innovation but also requires cooperation among countries and the improvement of relevant regulatory frameworks. This paper aims to provide valuable insights and references for regulators and stakeholders through the discussion of these issues.

⁴³⁰ Nick Feinstein, "Learning from Past Mistakes: Future Regulation to Prevent Greenwashing," *Boston College Environmental Affairs Law Review* 40, no. 1 (2013), 229–58.

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