



Unveiling The Nexus: Exploring the Impact of Behavioral Finance on Green Finance Initiatives

Rahul Chuahan*, Kishan Chavda

Unitedworld Institute of Management, Karnavati University, Gandhinagar, Gujarat, India

*Correspondence: Rahul Chuahan

Email: rj88chauhan@gmail.com

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Abstract: This research paper delves into the dynamic landscape of global climate finance during the fiscal years of 2021/2022, examining the collaborative efforts of public and private actors in addressing the multifaceted challenges posed by climate change. The equitable distribution of financial resources reflects a shared commitment to transformative action, with a focus on critical sectors such as energy, transport, and buildings and infrastructure. Both sectors emphasize the transition to renewable energy, sustainable transportation, and climate-resilient urban development. Public finance plays a pivotal role by directing support to relatively underserved sectors, including Agriculture, Forestry, and Other Land Use (AFOLU), water and wastewater management, and industry. This targeted intervention ensures inclusivity in climate action and contributes to broader sustainable development goals. The financial commitments not only reduce carbon footprints but also foster innovation, job creation, and economic resilience. The collaborative model of climate finance observed during this period sets a precedent for future endeavors, emphasizing a holistic and inclusive approach. The research suggests potential avenues for future

studies, such as assessing the long-term impact of climate finance, evaluating evolving patterns in public-private collaboration, and exploring the integration of climate finance within global policy frameworks. Ultimately, this research contributes to the ongoing discourse on climate resilience, offering insights into the interconnectedness of financial commitments, sustainable development, and the global fight against climate change.

Keywords: Climate Finance, Public-Private Collaboration, Sustainable Development

Introduction

In the dynamic landscape of financial markets, the intersection of behavioral finance and green finance has emerged as a captivating field of study, offering insights into the intricacies of investor behavior and its consequential effects on sustainable investment practices. As we navigate an era marked by an increasing awareness of environmental concerns and a growing commitment to sustainable development, understanding the interplay between behavioral biases and green finance becomes paramount. This research endeavors to shed light on the multifaceted relationship between behavioral finance and green finance, exploring the implications for investors, policymakers, and the broader financial ecosystem.

The relevance of behavioral finance in the context of green finance is underscored by the unique characteristics of sustainable investments. Investors in the green finance space are not only driven by financial considerations but are also influenced by ethical, social, and

environmental factors. This complex decision-making environment provides a fertile ground for the exploration of behavioral biases and their impact on investment choices.

A comprehensive understanding of the intersection between behavioral finance and green finance is crucial for several reasons. Firstly, it can elucidate the drivers behind the growing popularity of sustainable investments and the challenges investors face in aligning their financial goals with their environmental and social values. Secondly, recognizing the behavioral biases that may hinder or facilitate green finance initiatives can inform the design of more effective policies and interventions to promote sustainable investments.

The integration of green finance into the broader financial landscape is a significant global trend. As governments and businesses increasingly commit to environmental sustainability, the demand for green financial products is on the rise. Investors are confronted with a myriad of choices, ranging from green bonds to sustainable mutual funds, each presenting a unique set of challenges and opportunities. Consequently, understanding how behavioral biases shape investor decisions in this evolving landscape is pivotal for crafting strategies that encourage environmentally responsible investments.

This research aims to contribute to the existing body of knowledge by delving into specific behavioral biases that impact decision-making in the realm of green finance. By identifying these biases and their consequences, we can offer valuable insights to investors, policymakers, and financial institutions, ultimately fostering a more sustainable and resilient financial future. Through an exploration of behavioral nuances in green finance, this study endeavors to provide actionable recommendations for mitigating biases and optimizing decision-making processes in the pursuit of a greener and more sustainable financial world.

In the ever-evolving landscape of financial markets, the confluence of behavioral finance and green finance has emerged as a captivating domain, offering profound insights into the intricacies of investor behavior and its consequential impact on sustainable investment practices. As we navigate an era characterized by a heightened awareness of environmental concerns and an escalating commitment to sustainable development, understanding the interplay between behavioral biases and green finance becomes paramount. This research seeks to elucidate the multifaceted relationship between behavioral finance and green finance, exploring its implications for investors, policymakers, and the broader financial ecosystem.

The relevance of behavioral finance in the context of green finance is emphasized by the unique characteristics of sustainable investments. Investors in the green finance space are not only motivated by financial returns but are also influenced by ethical, social, and environmental considerations. This complex decision-making environment provides a fertile ground for the exploration of behavioral biases and their impact on investment choices, as discussed by Statman (2004) in "Behavioral Finance: Past Battles and Future Engagements."

A comprehensive understanding of the intersection between behavioral finance and green finance is crucial for several reasons. Firstly, it can provide insights into the drivers behind the escalating popularity of sustainable investments and the challenges investors

face in aligning their financial goals with their environmental and social values (Baker et al., 2019). Secondly, recognizing the behavioral biases that may hinder or facilitate green finance initiatives can inform the design of more effective policies and interventions to promote sustainable investments (Barberis, 2013).

The integration of green finance into the broader financial landscape is a significant global trend. Governments and businesses are increasingly committing to environmental sustainability, leading to a surge in demand for green financial products. Investors are confronted with a myriad of choices, ranging from green bonds to sustainable mutual funds, each presenting a unique set of challenges and opportunities. Consequently, understanding how behavioral biases shape investor decisions in this evolving landscape is pivotal for crafting strategies that encourage environmentally responsible investments.

This research aims to contribute to the existing body of knowledge by delving into specific behavioral biases that impact decision-making in the realm of green finance. By identifying these biases and their consequences, we can offer valuable insights to investors, policymakers, and financial institutions, ultimately fostering a more sustainable and resilient financial future. Through an exploration of behavioral nuances in green finance, this study endeavors to provide actionable recommendations for mitigating biases and optimizing decision-making processes in the pursuit of a greener and more sustainable financial world.

Literature Review

Green finance serves as an efficient investment and financing activity, yielding environmental benefits to bolster sustainable development. It stands as an innovative theory that intricately links the realms of environmental and financial industries (Salazar, 1998). Grounded in the principles of respecting market laws and mechanisms, green finance leverages the market to enhance a government's control over the allocation of market resources. In doing so, it emerges as a crucial bridge, facilitating the transformation from environmental endeavors to economic outcomes.

Positioned as a financial instrument, green finance relies on market dynamics to enhance environmental quality and shift environmental risks (Labatt and White, 2002; Lee et al., 2021). Scholtens (2006) encapsulates the essence of green finance as a financial instrument specifically crafted to realize sustainable social, environmental, and economic development. Wang et al. (2011) broaden the conceptualization, defining green finance interchangeably as low-carbon finance, environmental finance, or sustainable finance. In their comprehensive view, green finance encompasses various financial system arrangements and trading activities strategically designed to curtail greenhouse gas emissions.

The global emphasis on environmental concerns has propelled the continual refinement and evolution of the connotation and denotation of green finance. This dynamic field, as highlighted by Salazar (1998), not only generates positive ecological impacts but also aligns with market principles, reinforcing the symbiotic relationship between environmental preservation and economic growth. In this context, green finance emerges as

a pivotal tool for governments, empowering them to exercise effective control over resource allocation within the market, thereby fostering a pathway toward the integration of environmental priorities into economic strategies.

As the world grapples with escalating environmental challenges, the significance of green finance becomes increasingly pronounced. Labatt and White (2002) emphasize the reliance of green finance on market-driven mechanisms to enhance environmental quality, emphasizing the crucial role it plays in orchestrating a delicate balance between economic development and ecological preservation. Lee et al. (2021) corroborate this perspective by underscoring the reliance of green finance on market dynamics to mitigate environmental risks, positioning it as a strategic player in the broader landscape of financial instruments.

In conclusion, the multifaceted definitions provided by scholars such as Salazar (1998), Scholtens (2006), and Wang et al. (2011) collectively contribute to our understanding of green finance. Whether viewed as an instrument for sustainable development, a mechanism for reducing greenhouse gas emissions, or a bridge connecting environmental and economic domains, green finance stands as a dynamic and evolving force, reflecting the global commitment to environmental stewardship and sustainable economic progress.

The examination of the impacts of green financial development at both micro and macro levels stands as a pivotal area of scholarly inquiry, delving into how the growth of green finance reverberates across national economies and financial institutions. Liu and Wen (2019) contribute novel insights by framing the discussion of environmental responsibility within the classical economic growth theory, offering innovative perspectives for the exploration of green finance. Ren et al. (2020), employing the vector error model, empirically find that the implementation of green finance correlates with a reduction in carbon intensity. In a noteworthy contribution, Thomas et al. (2007) calculate economic added value by incorporating external environmental costs, providing a valuable foundation for financial institutions in assessing loans and forecasting a project's future environmental risks.

The impact of green finance on financial institutions is a subject of debate, with two distinct viewpoints. One perspective posits that green finance augments the growth of financial institutions. Chami et al. (2002) contend that the implementation of green finance is conducive to the strategic development of financial institutions. Conversely, an opposing view suggests that green finance may impede the growth of financial institutions. He et al. (2019a), in a study focused on China, assert that green finance suppresses the efficiency of banks' investments in renewable energy. Similarly, Biswas (2011), in an exploration of the Indian context, posits that banks lack motivation to enact a green credit policy.

Addressing the regulatory dimension, Thomas and Hilke (2018) introduce the green support factor into bank capital supervision, providing a regulatory framework that considers environmental factors. In a comprehensive study, Niu et al. (2020) apply the double difference method to verify that a green credit policy enhances the financing convenience of green-listed companies in the short term, emphasizing the positive impact of such policies on specific sectors of the economy.

In conclusion, the diverse perspectives presented by Liu and Wen (2019), Ren et al. (2020), Chami et al. (2002), He et al. (2019a), Biswas (2011), Thomas et al. (2007), Thomas and Hilke (2018), and Niu et al. (2020) collectively enrich our understanding of the multifaceted impacts of green finance on financial institutions. This nuanced exploration sheds light on both the potential benefits and challenges associated with the integration of green finance principles into the operations of financial institutions, contributing to a holistic comprehension of the evolving landscape of sustainable finance.

Research Method

The research methodology employed in this study adopts a qualitative approach to delve into the impact of behavioral finance on green finance initiatives. A qualitative design is deemed appropriate as it allows for a nuanced understanding of complex phenomena within the context of behavioral finance and sustainable investment. The primary method of data collection involves a comprehensive review of secondary sources, drawing from reputable websites, academic papers from esteemed databases such as Emerald and Scopus, and reports from governmental and non-governmental organizations dedicated to sustainable finance. Selection criteria prioritize the relevance and credibility of the sources, with preference given to peer-reviewed articles and reports from recognized authorities in the field.

Extracted data encompass theoretical frameworks, empirical findings, case studies, and practical examples illustrating the influence of behavioral factors on investment decisions in the realm of green finance. Thematic analysis will be employed to identify patterns and relationships pertinent to the research objectives, with a focus on key concepts such as behavioral biases, decision-making processes, and investor preferences. Triangulation will be utilized to enhance the credibility and robustness of the findings by cross-referencing information from multiple sources.

Throughout the study, ethical considerations will be paramount, with proper attribution given to all sources to uphold academic integrity and adherence to ethical guidelines for research conduct. Through this methodological framework, the study aims to contribute valuable insights to the burgeoning field of sustainable finance and behavioral economics.

Result and Discussion

In a baseline research, the annual climate finance requirements exhibit a gradual but substantial rise, starting at \$8.1 trillion and progressing steadily to \$9 trillion by 2030. However, the trajectory takes a notable leap thereafter, with estimated needs soaring to surpass \$10 trillion annually from 2031 to 2050. This implies a critical juncture, demanding a swift and substantial increase in climate finance by at least five-fold each year. The urgency

of this escalation is underscored by the imperative to avert the most severe impacts of climate change.

The escalation in required climate finance reflects the mounting challenges associated with mitigating and adapting to climate change. As the global community grapples with rising temperatures, extreme weather events, and other climate-related threats, the financial resources allocated for climate action must significantly amplify. The shift to a trajectory of over \$10 trillion annually after 2030 highlights the escalating costs and complexities associated with addressing the multifaceted dimensions of climate change.

To avoid the gravest consequences of climate change, this analysis stresses the imperative for a rapid and substantial response in financial commitments. Achieving the necessary five-fold increase annually is not only an economic challenge but also a critical step in safeguarding the planet's ecological balance and the well-being of its inhabitants. The urgency of this call to action emphasizes the need for global cooperation, innovative financing mechanisms, and a profound commitment to sustainable practices to ensure a resilient and climate-resilient future.

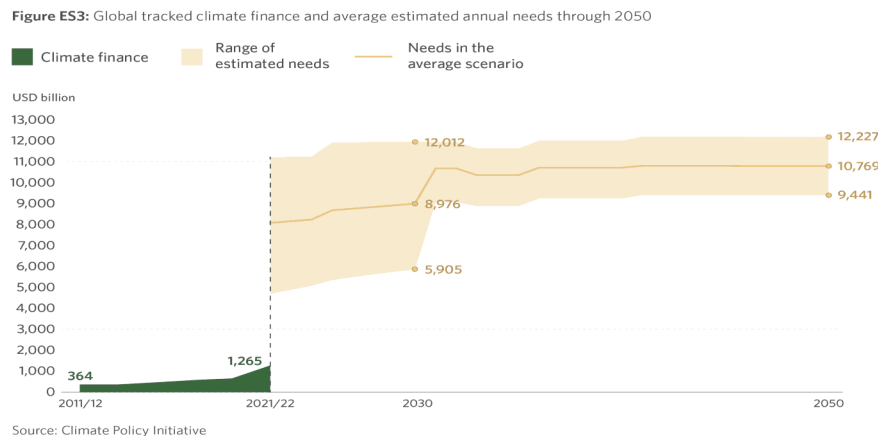


Figure 1 Global tracked climate finance and average estimated annual needs through 2050

In the fiscal years of 2021/2022, the distribution of global climate finance demonstrated a relatively equitable split between public and private actors. This balanced allocation reflects a collaborative approach where both sectors contribute significantly to addressing climate challenges. Notably, both public and private entities prioritize key sectors crucial for sustainable development, with a predominant focus on energy, transport, and buildings and infrastructure.

The energy sector stands out as a central area of emphasis, representing a critical frontier in the transition to renewable and sustainable sources. Both public and private financiers recognize the pivotal role of clean energy in mitigating climate change impacts. Similarly, attention to the transport sector acknowledges the need for eco-friendly transportation solutions, aligning with global efforts to reduce carbon emissions. Buildings and infrastructure, essential components of sustainable urban development, attract

significant climate finance attention. Investments in green buildings and resilient infrastructure are crucial for fostering sustainable living and ensuring climate resilience in the face of environmental challenges.

While public and private actors converge on these common priorities, public finance exhibits a distinctive role in targeting sectors that may be relatively underserved by private investments. These include Agriculture, Forestry, and Other Land Use (AFOLU), water and wastewater management, and industrial initiatives.

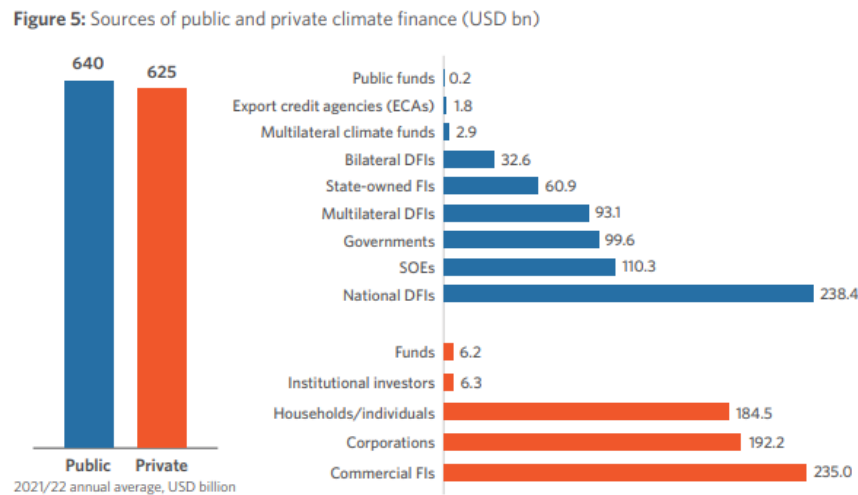


Figure 2 Sources of public and private climate finance (USD bn)

In conclusion, the balanced distribution of global climate finance between public and private actors during 2021/2022 reflects a concerted effort to address climate challenges comprehensively. While both sectors prioritize energy, transport, and buildings and infrastructure, public finance plays a crucial role in bridging gaps and directing resources toward sectors that may face challenges in attracting private investments, ensuring a more inclusive and holistic approach to climate action.

In the fiscal years of 2021/2022, the landscape of global climate finance exhibited a commendable equilibrium, with a substantial and nearly equal distribution between public and private actors. This collaborative allocation reflects a collective acknowledgment of the shared responsibility in addressing the escalating challenges posed by climate change. Notably, both public and private entities directed their financial commitments towards key sectors pivotal for sustainable development, with a significant emphasis on energy, transport, and buildings and infrastructure.

The energy sector, a cornerstone of global efforts to combat climate change, emerged as a primary focus for both public and private financiers. The recognition of the pivotal role of clean and renewable energy sources is evident in the concerted financial support directed towards projects and initiatives geared at transitioning away from fossil fuels. Investments in renewable energy infrastructure, such as solar and wind power projects, reflect a shared

commitment to reducing greenhouse gas emissions and fostering a more sustainable energy landscape.

Similarly, the transport sector garnered considerable attention from both public and private financiers. The imperative to develop and adopt eco-friendly transportation solutions aligns with broader global efforts to curtail carbon emissions. Financial commitments to the electrification of transportation, the development of sustainable public transit systems, and the advancement of electric and hybrid vehicles underscore the shared commitment to addressing one of the significant contributors to climate change.

The focus on buildings and infrastructure underscores the importance of sustainable urban development in the fight against climate change. Investments in green buildings and resilient infrastructure are critical for creating environments that are both environmentally friendly and adaptable to the challenges posed by climate change. Both public and private actors recognize the need to align urban development with sustainability goals, ensuring that infrastructure investments contribute to, rather than exacerbate, climate-related issues.

While the convergence of public and private actors on these common priorities is evident, public finance plays a distinctive role by extending its reach into sectors that may face challenges in attracting private investments. Public finance serves as a crucial instrument for addressing gaps and directing resources towards sectors that may be relatively underserved. These include Agriculture, Forestry, and Other Land Use (AFOLU), water and wastewater management, and industrial initiatives. The public sector's inclination towards these sectors reflects a commitment to addressing critical yet often overlooked aspects of climate change mitigation and adaptation.

Agriculture, Forestry, and Other Land Use (AFOLU) are vital components of climate action due to their potential for both emissions reduction and carbon sequestration. Public financing directed towards sustainable practices in agriculture and forestry, such as afforestation and reforestation projects, contributes to carbon neutrality goals and biodiversity preservation.

Water and wastewater management are crucial for climate resilience, particularly in the face of changing precipitation patterns and extreme weather events. Public financing in this sector supports the development of resilient water infrastructure, efficient water management practices, and wastewater treatment facilities. In the industrial sector, public finance plays a role in supporting sustainable and low-emission technologies. Investments in cleaner industrial processes, circular economy initiatives, and energy-efficient manufacturing contribute to mitigating the environmental impact of industrial activities.

In conclusion, the equitable distribution of global climate finance between public and private actors during 2021/2022 reflects a holistic and collaborative approach to addressing climate challenges. The shared focus on energy, transport, and buildings and infrastructure highlights a collective commitment to transformative action. Simultaneously, public finance's targeted support for relatively underserved sectors emphasizes the importance of inclusivity and comprehensive strategies in the global endeavor to combat climate change. The collaboration between public and private actors, with each playing distinct roles, contributes to a more resilient, sustainable, and environmentally conscious global economy.

Conclusion

In navigating the intricate landscape of global climate finance during the fiscal years of 2021/2022, a nuanced tapestry emerges, showcasing a collaborative commitment to addressing the pressing challenges posed by climate change. The equitable distribution of financial resources between public and private actors reflects a shared recognition of the shared responsibility in steering the world towards a more sustainable and resilient future. This synthesis of efforts, with both sectors investing significantly in key areas, manifests in a collective endeavor to mitigate the impacts of climate change across crucial sectors, namely energy, transport, and buildings and infrastructure.

The energy sector, being at the forefront of global climate action, received substantial attention from both public and private financiers. The focus on renewable and clean energy sources underscores a shared vision of transitioning away from fossil fuels and embracing sustainable alternatives. Investments in solar and wind energy projects, among others, not only signify a commitment to reducing greenhouse gas emissions but also lay the groundwork for a more sustainable energy landscape. This convergence in priorities reflects a unified front against the existential threat of climate change, highlighting the pivotal role of the energy sector in shaping a low-carbon future.

Similarly, the transport sector emerged as a key focal point for both public and private financial commitments. Recognizing the environmental impact of traditional transportation systems, investments in electrification, sustainable public transit, and eco-friendly vehicles mirror a collective effort to curtail carbon emissions and promote sustainable mobility solutions. The emphasis on transforming transportation aligns with broader global initiatives to build more climate-resilient and environmentally conscious urban environments.

The spotlight on buildings and infrastructure reaffirms the intertwined nature of sustainable urban development and climate action. Both public and private financiers channeled resources into green buildings and resilient infrastructure, emphasizing the importance of creating environments that are both environmentally friendly and adaptable to the challenges posed by climate change. This shared commitment to sustainable urban development signals a collective understanding that the way we build and inhabit spaces significantly influences our ability to mitigate and adapt to climate change.

Amidst these shared priorities, public finance plays a distinct and vital role by extending support to sectors that may face challenges in attracting private investments. Agriculture, Forestry, and Other Land Use (AFOLU), water and wastewater management, and industrial initiatives represent crucial facets of climate action that often require targeted intervention. Public financing in AFOLU supports sustainable practices in agriculture and forestry, contributing to carbon neutrality goals and biodiversity preservation. Investments in water and wastewater management are essential for climate resilience, ensuring efficient water infrastructure and treatment facilities. In the industrial sector, public finance supports the adoption of sustainable and low-emission technologies, fostering cleaner industrial processes and energy-efficient manufacturing.

The holistic approach to climate finance in 2021/2022, with both public and private actors playing complementary roles, emphasizes the need for inclusive and comprehensive strategies. The collaborative efforts underscore the interconnectedness of diverse sectors in the face of climate change and the importance of addressing both immediate and overlooked challenges. This synergy provides a blueprint for a resilient, sustainable, and environmentally conscious global economy.

In conclusion, the equitable distribution of global climate finance in the specified period embodies a shared commitment to transformative action, with both public and private actors contributing to a sustainable future. The convergence on common priorities and the targeted support for underserved sectors demonstrate a comprehensive approach to addressing the multifaceted impacts of climate change. As the world grapples with the urgency of climate action, the collaboration observed in climate finance during 2021/2022 serves as a beacon of hope, illustrating that by working together, nations and industries can build a more resilient and sustainable future for generations to come.

This collaborative endeavor in global climate finance during the fiscal years of 2021/2022 represents not only a financial commitment but a collective ethos that recognizes the urgency and interconnected nature of climate challenges. The equitable distribution between public and private actors signifies a departure from siloed approaches, emphasizing the need for a harmonized and inclusive strategy to address the multifaceted dimensions of climate change.

The transformative power of these financial commitments lies not only in the sectors they target but in the ripple effect they create across economies. By directing resources towards renewable energy, sustainable transportation, and climate-resilient infrastructure, the global community is laying the groundwork for a paradigm shift in how societies produce and consume. These investments not only reduce carbon footprints but foster innovation, job creation, and economic resilience, aligning economic growth with environmental stewardship.

Public finance's distinctive role in supporting sectors such as AFOLU, water and wastewater management, and industry underscores a commitment to inclusivity. By addressing areas that may face challenges in attracting private investments, public finance becomes a catalyst for systemic change. Sustainable agriculture practices, resilient water infrastructure, and cleaner industrial processes are not only crucial for climate mitigation but also contribute to broader sustainable development goals.

As nations strive to meet and exceed climate targets, this collaborative model of climate finance sets a precedent for future endeavors. It sends a powerful message that the global community is willing to transcend traditional boundaries and collaborate on a shared vision for a sustainable future. The emphasis on public-private collaboration not only magnifies the impact of financial investments but also fosters a sense of collective responsibility, encouraging nations, businesses, and individuals to actively participate in the global fight against climate change.

In essence, the story of climate finance in 2021/2022 is one of unity, innovation, and collective action. It marks a turning point where financial commitments are not mere

transactions but pivotal steps toward a resilient, low-carbon, and sustainable future. As the world continues to grapple with the complex challenges of climate change, this collaborative model offers a beacon of hope and a blueprint for a more inclusive and sustainable global economy. The journey towards climate resilience is far from over, but the collaborative spirit witnessed in these fiscal years lays a solid foundation for a future where environmental and economic objectives harmoniously coexist.

Future studies could explore the long-term outcomes of global climate finance interventions, tracking the sustained impact on sectors like energy, transport, and infrastructure. Investigating evolving patterns in public and private collaboration, assessing the adaptability of financial models, and exploring emerging technologies' influence on climate finance effectiveness would provide valuable insights. Additionally, examining the integration of climate finance within evolving global policy frameworks and its role in fostering international cooperation can further enhance our understanding of the dynamic landscape of climate action.

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