International Journal of Science and Research Archive
eISSN: 2582-8185
Cross Ref DOI: 10.30574/ijsra
Journal homepage: https://ijsra.net/

(Review Article)

Green bonds in climate finance: A review of USA and African initiatives

Olawale Adisa [1], Bamidele Segun Ilugbusi [2,*], Ogugua Chimezie Obi [3], Kehinde Feranmi Awonuga [4] and Onyeka Franca Asuzu [5]

[1] *Jack Welch College of Business, Department of Economics, Sacred Heart University, Fairfield, USA.*
[2] *Department of Business Administration, Afe Babalola University, Ado-Ekiti.*
[3] *Independent Researcher, Lagos, Nigeria.*
[4] *Independent Researcher. United Kingdom.*
[5] *Dangote Sugar Refinery Plc, Nigeria.*

International Journal of Science and Research Archive, 2024, 11(01), 2376–2383

Publication history: Received on 17 December 2023; revised on 20 February 2024; accepted on 22 February 2024

Article DOI: https://doi.org/10.30574/ijsra.2024.11.1.0147

Abstract

Green Bonds have emerged as a pivotal instrument in climate finance, facilitating the transition towards a sustainable and low-carbon economy. This paper provides a comprehensive review of Green Bond initiatives in both the United States and Africa, shedding light on the distinct trajectories, challenges, and opportunities within these regions. In the United States, Green Bonds have gained substantial traction as a financial mechanism to support environmentally friendly projects. The review explores the regulatory framework, market dynamics, and the role of key stakeholders in shaping the landscape of Green Bonds in the U.S. The analysis delves into the impact of policy developments, such as the Biden administration's commitment to climate action, on the growth and diversification of Green Bond issuance. Additionally, it examines the investor perspective and the evolving disclosure standards that contribute to the transparency and credibility of these financial instruments. On the African continent, Green Bonds have emerged as a critical tool for mobilizing capital to address climate-related challenges while promoting sustainable development. The paper highlights the unique challenges faced by African nations, including limited financial infrastructure and the need for capacity building. It discusses the role of international partnerships and multilateral institutions in supporting African countries in their endeavors to issue Green Bonds. The review also explores how these financial instruments contribute to the continent's broader climate resilience and mitigation strategies. Furthermore, the paper emphasizes the importance of aligning Green Bond initiatives with broader sustainable development goals, ensuring that the financing mechanisms not only address climate change but also contribute to social and economic development. It discusses the potential for innovation in structuring Green Bonds to attract diverse investors and foster inclusivity in climate finance. This paper provides a nuanced overview of Green Bond initiatives in the United States and Africa, offering insights into the diverse strategies employed, challenges faced, and the broader implications for climate finance. The comparative analysis aims to inform policymakers, investors, and stakeholders, fostering a deeper understanding of the evolving landscape of Green Bonds in these distinct yet interconnected regions.

Keyword: Green Bonds; Climate Finance; USA; Africa; Review

1. Introduction

Green bonds have emerged as a crucial tool in climate finance, representing debt instruments where the issuer commits to utilizing the proceeds for projects with positive environmental or climate impacts (Fatica & Panzica, 2021). The importance of studying green bond initiatives in the USA and Africa lies in the need to understand the dynamics of green bond markets in both developed and emerging economies. The USA represents a significant player in global financial markets, and its green bond initiatives can provide insights into the integration of environmental considerations into

* Corresponding author: Bamidele Segun Ilugbusi

established financial systems (Lin & Su, 2022). On the other hand, studying African initiatives is crucial due to the region's potential for green finance growth and the need to address climate change and environmental challenges (Taghizadeh-Hesary et al., 2022). The purpose of this review is to analyze the characteristics of green bond markets in the USA and Africa, aiming to facilitate a comprehensive understanding of the role of green bonds in climate finance and their potential impact on environmental sustainability. The scope of the review encompasses an examination of the issuance, market dynamics, investor response, and the impact of green bonds on climate change mitigation and adaptation in the USA and African contexts.

2. Green Bonds in Climate Finance

Green bonds have emerged as a significant financial instrument in the field of climate finance, aiming to support environmentally friendly projects and investments (Haddad & Rokhim, 2022). These bonds play a crucial role in promoting the financing of various green initiatives and projects, contributing to the improvement of the ecological environment and the efficient use of resources to combat climate change (Fang & Shao, 2022). Research has shown that green bonds have both "bond" and "green" attributes, making them an important tool for financing green financial markets (Wang et al., 2019). Furthermore, the issuance of instruments such as green bonds and tax-free infrastructure bonds for renewable energy projects, along with the establishment of National Climate Funds, are innovative ways of mobilizing climate finance (Samuwai & Hills, 2018).

The positive and statistically significant spread between conventional bonds and green bonds can be attributed to differences in the fundamental characteristics of the bonds, with issuers of green bonds generally being more creditworthy and having stronger economic fundamentals (Lebelle et al., 2020). Additionally, it has been observed that green finance alleviates the financing pressure of environmental protection enterprises, leading to an increase in the loan amount and a reduction in the loan interest rate, thereby enhancing the willingness of environmental protection enterprises to engage in green innovation activities and expedite the sustainable development of the green industry (Fang & Shao, 2022). Figure 1 shows some of the top issuers of green bond in the world.

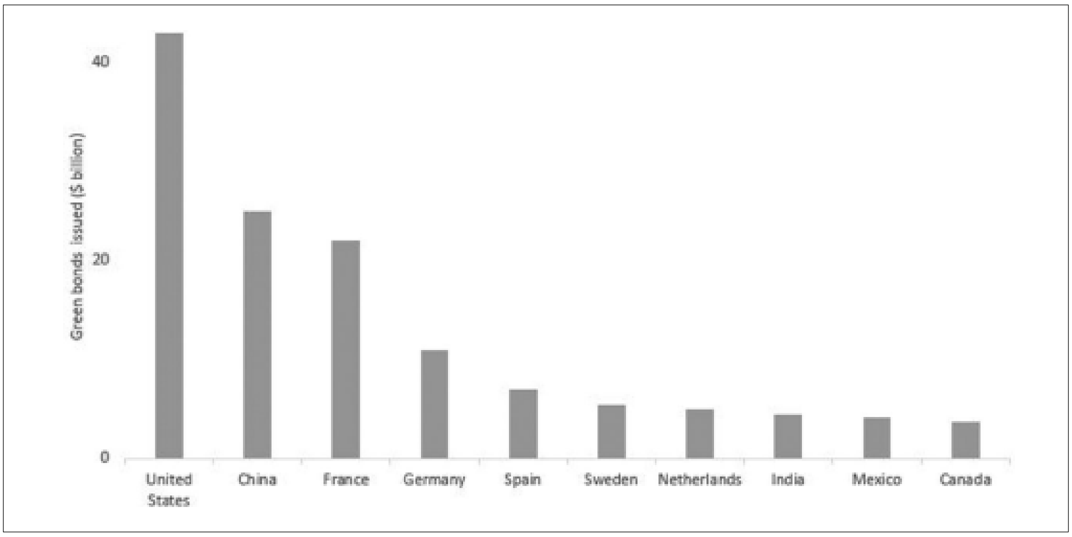

Figure 1 Top ten issuers of green bonds, January-November 2017. Data source: Climate Bonds Initiative (Banga, 2019)

Despite the potential of green bonds in promoting environmental sustainability, challenges exist in evaluating the specificities of private investments related to climate finance due to the lack of internationally agreed methodology to track private climate finance flows (Masse et al., 2020). Moreover, the unequal distribution of international climate finance flows and inconsistent reporting by countries have hindered the measurement of climate finance provided to developing countries, highlighting the complexities and challenges associated with climate finance (Rickman et al., 2022).

In conclusion, green bonds represent a significant aspect of green finance, playing a pivotal role in promoting environmental sustainability and combating climate change. While they offer potential benefits for financing green initiatives, there are challenges in evaluating and tracking private climate finance flows, indicating the need for standardized methodologies and improved reporting mechanisms in the field of climate finance.

2.1. Green Bonds in the United States

The regulatory framework for Green Bonds in the United States is shaped by relevant policies and regulations that aim to promote environmentally sustainable projects and investments. Government commitment to climate action has a significant impact on the development of this framework, as it influences the incentives, tax-based initiatives, and investor awareness that play a crucial role in scaling up the Green Bonds market (Agliardi & Agliardi, 2019).

The growth and diversification of Green Bond issuance in the United States are influenced by the role of key stakeholders, including governmental tax-based incentives, private investors, and households. Green Bonds are increasingly recognized as a permanent financing tool beneficial for private investors and the environment, rather than a temporary tool to boost green projects (Tu & Rasoulinezhad, 2021). The market dynamics are also affected by the prevalence of Green Bond issuance in the United States and Europe compared to other countries, indicating the influence of regional differences in shaping the market (Benlemlih et al., 2022).

The market dynamics of Green Bonds in the United States have seen significant growth and diversification in recent years. Karpf & Mandel (2018) analyzed the US municipal bond market and found that the green bond premium has been positive, indicating a growing interest in green bonds. Furthermore, Macaskill et al. MacAskill et al. (2021) highlighted that green bonds in the US municipal bond market are oversubscribed by more than three times on average, indicating a strong demand for these instruments.

The role of key stakeholders in shaping the US Green Bond market has been crucial. Lebelle et al. (2020) concluded that the market penalizes green bonds to a higher degree than conventional non-Green Bonds, indicating the influence of investors and financial institutions in shaping the market dynamics. Additionally, Taghizadeh-Hesary et al. (2021) found that green bonds in Asia tend to show higher returns but higher risks and higher heterogeneity, suggesting the influence of regional factors and investor behavior in shaping the market.

Moreover, the characteristics of green bonds in the US municipal market seem to have been amplified by the market, giving rise to a 'reputational' green premium (Karpf & Mandel, 2018). This indicates the influence of market perceptions and reputational factors in shaping the dynamics of green bond issuance.

The US Green Bond market has experienced significant growth and diversification, with key stakeholders such as investors, financial institutions, and market perceptions playing a crucial role in shaping its dynamics. The process for issuing a certified green bond is shown on figure 2.

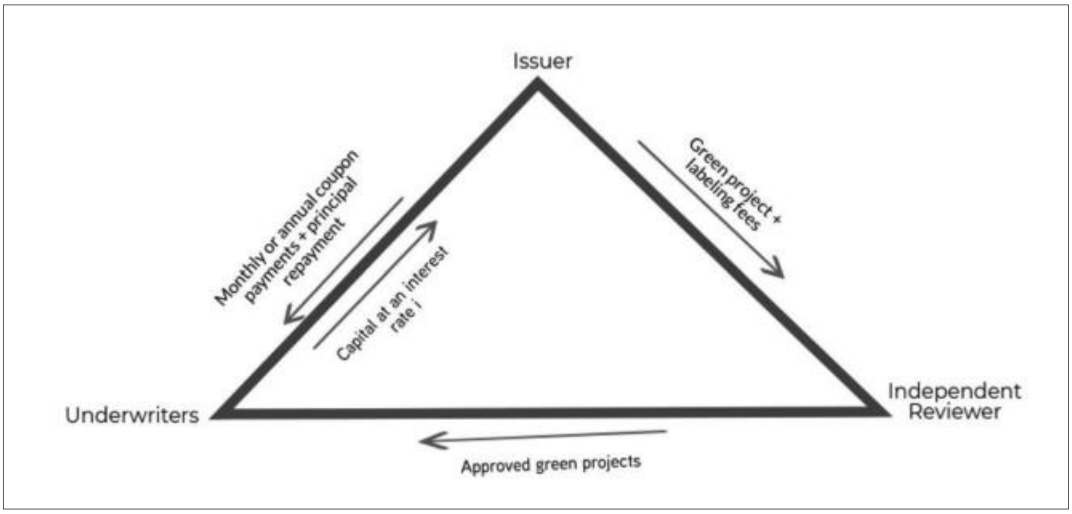

Figure 2 The process for issuing a certified green bond involves three markets players with specific roles (Banga, 2019)

Investors are motivated to participate in Green Bonds due to the increasing awareness of environmental issues and the potential for a positive impact on the environment. The "greenness" of the bond makes investors willing to pay a positive premium, reflecting their evolving expectations and preferences for environmentally sustainable investments (Prajapati et al., 2021). Additionally, the link between green bonds, treasury bonds, and corporate bonds in the United States and the European Union suggests a strong connection between Green Bonds and investor preferences (Ahmad et al., 2022).

Transparency and disclosure requirements contribute significantly to the credibility of Green Bonds. The lack of a clear and reliable definition of Green Bonds in the academic literature has led to the acceptance of standards outlined by the Climate Bond Initiative (CBI) and the Green Bond Principles (GBPs) to assess the qualification of a Green Bond. These standards enhance the credibility of Green Bonds by providing eligible criteria and a well-recognized definition (Russo et al., 2020).

2.2. Green Bonds in Africa

Green bonds have emerged as a potential tool to combat climate change, with a focus on financing sustainable infrastructure projects (Fatica & Panzica, 2021). In Africa, the issuance of green bonds faces challenges due to limited financial infrastructure and capacity-building needs (Taghizadeh-Hesary et al., 2022). The limited financial infrastructure in African nations poses a significant challenge to the development and issuance of green bonds (Owusu-Manu et al., 2021). Additionally, the capacity-building needs in African countries further hinder their ability to issue green bonds effectively (Owusu-Manu et al., 2023). These challenges highlight the importance of international partnerships and the role of multilateral institutions in supporting African countries in issuing green bonds. The unbundling of the green bond market in the economic hubs of Africa, such as Kenya, Nigeria, and South Africa, demonstrates the potential for international partnerships to contribute to the growth of the market (Ngwenya & Simatele, 2020).

Furthermore, the integration of green bonds with broader climate strategies in Africa contributes to climate resilience and mitigation. The rethinking of a new transition finance paradigm for addressing the climate crisis in Africa emphasizes the need for innovative approaches to attract diverse investors and promote inclusivity in climate finance (Ngoasong, 2021). This aligns with the findings that the broader sustainability-oriented strategy of the issuer has an impact on the performance of green bonds, emphasizing the need for alignment with sustainable development goals (Fatica & Panzica, 2021). The study also presents the state of green bond markets in Africa and green bond funds by some countries in the continent, highlighting the early stages of Africa's green bond market (Taghizadeh-Hesary et al., 2022).

In conclusion, the challenges faced by African nations in developing and issuing green bonds, such as limited financial infrastructure and capacity-building needs, underscore the importance of international partnerships and the role of multilateral institutions. Integration with broader climate strategies not only contributes to climate resilience and mitigation but also aligns with sustainable development goals. Innovation in structuring green bonds is essential to attract diverse investors and promote inclusivity in climate finance, ultimately supporting the transition to a more sustainable and resilient future for Africa.

2.3. Comparative Analysis

To compare the strategies and trajectories of green bonds in climate finance in the USA and Africa, it is essential to consider the unique approaches and experiences of each region. In the USA, the focus has been on leveraging various domestic climate finance mobilization options, including green bonds, emission trading, carbon taxes, and budgetary allocations (Edeminam & Akpasoh, 2023). On the other hand, African initiatives have seen the emergence of green bonds as an integral component of climate finance, with a growing investor appetite for such instruments (Ngwenya & Simatele, 2020). The trajectory in the USA reflects a diverse set of strategies, while in Africa, the emphasis has been on recognizing climate change as a significant investment opportunity.

From the USA, lessons can be learned about the effectiveness of different domestic climate finance mobilization options, including the impact of green bonds on CO2 emissions and the market reaction to green bond issuance (Adebayo & Kartal, 2023; Wang et al., 2020). Additionally, the review of the impact of climate change on economic growth and the application of green finance in mitigation provides valuable insights (Lu, 2022). In contrast, African initiatives offer lessons on the emergence and growth of green bonds as an integral component of climate finance, highlighting the potential for cross-regional collaboration in developing and implementing effective green finance mechanisms (Ngwenya & Simatele, 2020; Abdoul-Azize et al., 2021).

The potential for cross-regional collaboration is evident in the empirical estimation of the nexus between green finance and climate change mitigation in the N-11 countries, which can provide valuable insights for both the USA and African countries (Nawaz et al., 2020). Furthermore, the examination of North-to-South financial flows and the impact of climate finance on gender equity for sustainable global development offers opportunities for collaboration and knowledge sharing between the two regions (Waheed & Waheed, 2022; Román et al., 2017).

In conclusion, the contrasting strategies and trajectories of green bonds in climate finance in the USA and Africa provide valuable lessons and opportunities for cross-regional collaboration. By leveraging the experiences and insights from both regions, it is possible to develop more effective and sustainable approaches to green finance, contributing to global climate change mitigation efforts.

2.4. Case Studies

Green bonds have emerged as a significant financial instrument in advancing sustainability and addressing climate change challenges. They play a crucial role in directing financing towards positive climate projects and environmental outcomes across various sectors such as energy, transportation, agriculture, and construction (Maltais & Nykvist, 2020). In the context of Africa, the green bond market is still in its early stages, with a focus on energy efficiency finance and renewable energy use. Case studies in Africa have highlighted the potential of green bonds for energy efficiency finance and their role in addressing climate change challenges in the region (Taghizadeh-Hesary et al., 2022). Furthermore, in Nigeria, green bonds are identified as financing instruments exclusively directing funds to positive climate projects, reflecting the growing relevance of green bonds in climate finance among emerging economies (Edeminam & Akpasoh, 2023).

In the USA, the impact of green bonds on industrial CO2 emissions has been studied, showing evidence of their supporting effect on environmental quality. This highlights the potential of green bonds to contribute to environmental sustainability and mitigate the impact of industrial activities on climate change (Adebayo & Kartal, 2023).

Overall, green bonds have demonstrated their significance in advancing sustainability, addressing climate change challenges, and promoting environmental quality in both developed and emerging economies.

2.5. Future Outlook and Emerging Trends

The issuance of green bonds has gained prominence in climate finance and sustainable development frameworks, with a growing interest in public policy towards green bonds to encourage market participants on both the demand and supply side (Fatica & Panzica, 2021). Green bonds are noted for their risk-alleviating features and appeal to institutional and socially responsible investors, making them an important mechanism for large-scale climate projects and offering investment opportunities for developing countries (Ngwenya & Simatele, 2020). Furthermore, green bonds are considered a new trend in countries' future financial development, with far-reaching significance for building resilience against the impacts of climate change and reducing greenhouse gas emissions (Nabil, 2023).

The relevance of green bonds in climate finance is further emphasized by their exclusive financing of positive climate projects and projects with environmental outcomes across various sectors such as energy, transportation, agriculture, and construction (Edeminam & Akpasoh, 2023). Additionally, the issuance of green bonds enables immediate investment in climate change mitigation and adaptation, with the bonds being repaid by future generations, thereby sharing the burden of financing mitigation efforts undertaken today (Heine et al., 2019).

The significance of green bonds in addressing climate change is evident in their emergence as the most important form of climate finance in terms of the overall share of capital investment in climate-focused projects, surpassing traditional sources of funding such as grants and forgivable loans (Long, 2021). Moreover, the green bond market is well-established and a significant factor in both developed and emerging countries, supported by growing climate awareness among investors (Alonso-Conde & Rojo-Suárez, 2020).

The growing relevance of green bonds in climate finance is not limited to developed countries, as they have gained prominence in emerging economies, with a recent study suggesting their growing relevance for climate finance in these regions (Fu & Ng, 2021). Green bonds have also emerged as tools to fuel the transition to a climate-resilient economy in countries such as China and Brazil, mobilizing incremental resources for long-term financing of sustainable infrastructure projects (Deus et al., 2021).

In conclusion, the future outlook and emerging trends of green bonds in climate finance are characterized by their increasing significance in addressing climate change, attracting investment in climate-focused projects, and mobilizing resources for sustainable development, not only in developed countries but also in emerging economies.

3. Recommendation and Conclusion

In the United States, Green Bonds have witnessed substantial growth, driven by a supportive regulatory framework and the Biden administration's commitment to climate action. The market dynamics and investor perspectives have played pivotal roles in shaping the landscape. In Africa, Green Bonds have emerged as critical instruments for addressing climate-related challenges. Despite facing challenges such as limited financial infrastructure, international partnerships and innovative structuring have facilitated progress, contributing to broader climate resilience and mitigation strategies.

Emphasize the importance of continued regulatory support to foster the growth of Green Bonds in the USA. Encourage African nations to strengthen their financial infrastructure and invest in capacity-building initiatives for successful Green Bond issuance. Recognize the evolving dynamics in both regions, understanding the unique factors influencing Green Bond markets. Advocate for transparent disclosure standards to enhance the credibility of Green Bonds. Collaborate on knowledge-sharing platforms to bridge the information gap between the USA and African Green Bond initiatives. Promote inclusivity in climate finance by exploring innovative approaches to attract a diverse range of investors.

This review underscores the significance of Green Bonds in climate finance, offering a nuanced perspective on initiatives in the USA and Africa. The key findings reveal the importance of regulatory support, market dynamics, and investor engagement in shaping the success of Green Bonds. For African nations, international partnerships play a crucial role in overcoming challenges and promoting sustainable development.

Explore the role of emerging technologies, such as blockchain, in enhancing transparency and efficiency in Green Bond markets. Investigate the potential for incorporating social impact components within Green Bonds to address broader sustainable development goals. Analyze opportunities for cross-regional collaboration to create a more interconnected and resilient global Green Bond market.

As the world intensifies its focus on climate change, the lessons learned from the USA and Africa can guide future strategies for leveraging Green Bonds as effective tools in climate finance. Policymakers, investors, and stakeholders must collaborate to unlock the full potential of Green Bonds in building a sustainable and resilient future.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

References

[1] Abdoul-Azize, H., Salé, A., & Soulé, M. (2021). Private telecommunication companies and climate finance: evidence from the niger republic. International Journal of Environment and Climate Change, 374-385. https://doi.org/10.9734/ijecc/2021/v11i1230588

[2] Adebayo, T. and Kartal, M. (2023). Effect of green bonds, oil prices, and covid-19 on industrial co2 emissions in the USA: evidence from novel wavelet local multiple correlation approach. Energy & Environment, 0958305X2311674. https://doi.org/10.1177/0958305x231167463

[3] Agliardi, E. and Agliardi, R. (2019). Financing environmentally-sustainable projects with green bonds. Environment and Development Economics, 24(6), 608-623. https://doi.org/10.1017/s1355770x19000020

[4] Ahmad, M., Chen, G., AYEH, E., & Ahmad, S. (2022). Green bonds investments firms and corporate social responsibility: evidence from morocco stock market.. https://doi.org/10.21203/rs.3.rs-2318281/v1

[5] Alonso-Conde, A. and Rojo-Suárez, J. (2020). On the effect of green bonds on the profitability and credit quality of project financing. Sustainability, 12(16), 6695. https://doi.org/10.3390/su12166695

[6] Banga, J., 2019. The green bond market: a potential source of climate finance for developing countries. *Journal of Sustainable Finance & Investment*, *9*(1), pp.17-32.

[7] Benlemlih, M., Jaballah, J., & Kermiche, L. (2022). Does financing strategy accelerate corporate energy transition? evidence from green bonds. Business Strategy and the Environment, 32(1), 878-889. https://doi.org/10.1002/bse.3180

[8] Deus, J., Crocco, M., & Silva, F. (2021). Green transition in emerging countries: the issuance of green bonds by brazil and china.. https://doi.org/10.5151/v-enei-628

[9] Edeminam, V. and Akpasoh, A. (2023). Climate finance landscape in nigeria. Resourceedings, 3(1), 13-21. https://doi.org/10.21625/resourceedings.v3i1.945

[10] Fang, Y. and Shao, Z. (2022). How does green finance affect cleaner industrial production and end-of-pipe treatment performance? evidence from china. Environmental Science and Pollution Research, 30(12), 33485-33503. https://doi.org/10.1007/s11356-022-24513-4

[11] Fang, Y. and Shao, Z. (2022). Whether green finance can effectively moderate the green technology innovation effect of heterogeneous environmental regulation. International Journal of Environmental Research and Public Health, 19(6), 3646. https://doi.org/10.3390/ijerph19063646

[12] Fatica, S. and Panzica, R. (2021). Green bonds as a tool against climate change?. Business Strategy and the Environment, 30(5), 2688-2701. https://doi.org/10.1002/bse.2771

[13] Fu, J. and Ng, A. (2021). Scaling up renewable energy assets: issuing green bond via structured public-private collaboration for managing risk in an emerging economy. Energies, 14(11), 3076. https://doi.org/10.3390/en14113076

[14] Haddad, H. and Rokhim, R. (2022). The role of indonesian investors in achieving sdgs through green bonds. Iop Conference Series Earth and Environmental Science, 1111(1), 012069. https://doi.org/10.1088/1755-1315/1111/1/012069

[15] Heine, D., Semmler, W., Mazzucato, M., Braga, J., Flaherty, M., Gevorkyan, A., ... & Radpour, S. (2019). Financing low-carbon transitions through carbon pricing and green bonds. Vierteljahrshefte Zur Wirtschaftsforschung, 88(2), 29-49. https://doi.org/10.3790/vjh.88.2.29

[16] Karpf, A. and Mandel, A. (2018). The changing value of the 'green' label on the us municipal bond market. Nature Climate Change, 8(2), 161-165. https://doi.org/10.1038/s41558-017-0062-0

[17] Lebelle, M., Jarjir, S., & Sassi, S. (2020). Corporate green bond issuances: an international evidence. Journal of Risk and Financial Management, 13(2), 25. https://doi.org/10.3390/jrfm13020025

[18] Lin, B. and Su, T. (2022). Uncertainties and green bond markets: evidence from tail dependence. International Journal of Finance & Economics, 28(4), 4458-4475. https://doi.org/10.1002/ijfe.2659

[19] Long, J. (2021). Crisis capitalism and climate finance: the framing, monetizing, and orchestration of resilience-amidst-crisis. Politics and Governance, 9(2), 51-63. https://doi.org/10.17645/pag.v9i2.3739

[20] Lu, Y. (2022). Climate change, green finance and economic growth. BCP Business & Management, 34, 1363-1369. https://doi.org/10.54691/bcpbm.v34i.3187

[21] MacAskill, S., Roca, E., Liu, B., Stewart, R., & Sahin, O. (2021). Is there a green premium in the green bond market? systematic literature review revealing premium determinants. Journal of Cleaner Production, 280, 124491. https://doi.org/10.1016/j.jclepro.2020.124491

[22] Maltais, A. and Nykvist, B. (2020). Understanding the role of green bonds in advancing sustainability. Journal of Sustainable Finance & Investment, 1-20. https://doi.org/10.1080/20430795.2020.1724864

[23] Masse, J., Gerber, P., Halpern, C., & Baedeker, T. (2020). Review: climate finance readiness of the animal protein sector: overview of experience in linking the sector to climate finance, and options to address bottlenecks. Animal, 14, s491-s499. https://doi.org/10.1017/s1751731120001755

[24] Nabil, M. (2023). The impact of green bonds on banking sector performance: a comparative study on developed and emerging markets., 67-85. https://doi.org/10.47260/jafb/1334

[25] Nawaz, M., Seshadri, U., Kumar, P., Aqdas, R., Patwary, A., & Riaz, M. (2020). Nexus between green finance and climate change mitigation in n-11 and brics countries: empirical estimation through difference in differences (did) approach. Environmental Science and Pollution Research, 28(6), 6504-6519. https://doi.org/10.1007/s11356-020-10920-y

[26] Ngoasong, M. (2021). Rethinking a new transition finance paradigm for addressing the climate crisis in Africa. https://doi.org/10.21203/rs.3.rs-1028661/v1

[27] Ngwenya, N. and Simatele, M. (2020). The emergence of green bonds as an integral component of climate finance in south africa. South African Journal of Science, 116(1/2). https://doi.org/10.17159/sajs.2020/6522

[28] Owusu-Manu, D., Debrah, C., Edwards, D., & Martek, I. (2021). Mechanisms and challenges in financing renewable energy projects in sub-saharan Africa: a Ghanaian perspective. Journal of Financial Management of Property and Construction, 26(3), 319-336. https://doi.org/10.1108/jfmpc-03-2020-0014

[29] Owusu-Manu, D., Edwards, D., El-Gohary, H., & Hussain, J. (2023). A cognizance of green bond features preferential to renewable energy project financing in Ghana. IEEE Transactions on Engineering Management, 70(3), 979-990. https://doi.org/10.1109/tem.2021.3080630

[30] Prajapati, D., Paul, D., Malik, S., & Mishra, D. (2021). Understanding the preference of individual retail investors on green bond in india: an empirical study. Investment Management and Financial Innovations, 18(1), 177-189. https://doi.org/10.21511/imfi.18(1).2021.15

[31] Rickman, J., Kothari, S., Larosa, F., & Ameli, N. (2022). The unequal distribution of international climate finance flows and its underlying drivers.. https://doi.org/10.21203/rs.3.rs-1188981/v1

[32] Román, M., Arto, I., & Ansuategi, A. (2017). Why do some economies benefit more from climate finance than others? a case study on north-to-south financial flows. Economic Systems Research, 30(1), 37-60. https://doi.org/10.1080/09535314.2017.1334629

[33] Russo, A., Mariani, M., & Caragnano, A. (2020). Exploring the determinants of green bond issuance: going beyond the long-lasting debate on performance consequences. Business Strategy and the Environment, 30(1), 38-59. https://doi.org/10.1002/bse.2608

[34] Samuwai, J. and Hills, J. (2018). Assessing climate finance readiness in the asia-pacific region. Sustainability, 10(4), 1192. https://doi.org/10.3390/su10041192

[35] Taghizadeh-Hesary, F., Yoshino, N., & Phoumin, H. (2021). Analyzing the characteristics of green bond markets to facilitate green finance in the post-covid-19 world. Sustainability, 13(10), 5719. https://doi.org/10.3390/su13105719

[36] Taghizadeh-Hesary, F., Zakari, A., Alvarado, R., & Tawiah, V. (2022). The green bond market and its use for energy efficiency finance in Africa. China Finance Review International, 12(2), 241-260. https://doi.org/10.1108/cfri-12-2021-0225

[37] Tu, C. and Rasoulinezhad, E. (2021). Energy efficiency financing and the role of green bond: policies for post-covid period. China Finance Review International, 12(2), 203-218. https://doi.org/10.1108/cfri-03-2021-0052

[38] Waheed, S. and Waheed, H. (2022). Impact of climate finance on gender equity for sustainable global development: can aid for climate action also aid gender equity?. Brazilian Journal of Science, 1(7), 82-94. https://doi.org/10.14295/bjs.v1i7.145

[39] Wang, J., Chen, X., Li, X., Yu, J., & Zhong, R. (2020). The market reaction to green bond issuance: evidence from china. Pacific-Basin Finance Journal, 60, 101294. https://doi.org/10.1016/j.pacfin.2020.101294

[40] Wang, Q., Yaning, Z., Luo, L., & Ji, J. (2019). Research on the factors affecting the risk premium of china's green bond issuance. Sustainability, 11(22), 6394. https://doi.org/10.3390/su11226394