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Green Finance and Sustainable Investment Strategies for Climate-Resilient Economies

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Abstract

Climate shocks are making economic fragility more costly, and green finance is becoming more important for financing investments that mitigate it. This paper explores the relationship between green finance intensity and the nature of sustainable investment strategies with respect to climate resilience, covering 96 economies categorized into four groups (advanced, emerging Asian, other emerging, and low-income economies). Six of these instruments were merged with a green finance intensity index, a climate resilience index, and carbon-intensity reduction to create the portfolio shares across the instruments. The sharply different financing models revealed in the results are evident: green bonds occupy 30.7 percent of portfolios in the advanced economies, but only 6.2 percent in the low-income economies, while resilient and adaptation infrastructure have the highest share in the latter (29.9 percent). There is a strong association between Green Finance intensity and Resilience ($r = 0.86$), with decreasing marginal returns beyond higher levels of intensity; while controlling for income and intensity, there is still explanatory power for adaptation spending ($R^2 = 0.81$). The results validate a differentiated approach: scale and diversify capital investments in places where there is low intensity, and focus investments in places where resilience needs are highest, in terms of adaptation.

Keywords: Green Finance, Sustainable Investment, Climate Resilience, Green Bonds, Adaptation Finance, Carbon Intensity, Climate Policy.

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Introduction

Adapting to climate change while also reducing emissions is not only a challenge that requires long-term investments in the economy, but public finances are also scarce. Green finance, generally, the routing of financial resources to the benefit of the environment, has emerged as the main tool to bridge that gap. The banking literature identifies critical questions for future research and key avenues for development in the field of green finance, while the energy transition, climate action, and sustainable development concepts and applications encompass a large number of challenges (Akomea-Frimpong et al., 2022; Bhattacharyya, 2022). This demonstrates the wide scope of the field, its applicability, and its unfinished state. The number of research-based sources has grown rapidly. Scientific mapping tools such as scientometric and bibliometric analyses have been used to visualize the evolution of research on green finance, to uncover new research trends, and to analyze the factors behind green investment (Cai & Guo, 2021; Chițimiea et al., 2021; Mohanty et al., 2023). The behavior of the market has also been studied in the context of climate change, showing the complementary nature of green instruments and the main financial asset markets Gao et al., (2023), indicating that green instruments relate to the rest of the financial system. Empirical research on outcomes is focused on China and a handful of studies across countries. The environmental impact of green finance reform and innovation has been studied based on the pilot zones, and the influence of green finance on regional economic sustainable development and the increasing value of the Chinese manufacturing value chain is also studied (Huang & Zhang, 2021; (Lin et al., 2023; Ma et al., 2023). Empirical studies have also been conducted at the cross-country level to look at the impact of green finance on CO_2 emissions (Meo & Abd Karim, 2022). From this body of work there are two gaps. First, most studies focus on green finance as a single value, even if the capital mobilized by green finance is done so via very different instruments in the economy. Secondly, there is a greater focus on emissions and less attention is paid to climate resilience, which is the ability of systems to take up and bounce back from climate shocks. This paper tries to answer both questions by asking the following research questions: RQ1, how are economies, in different income levels, allocating green finance to instruments? What is the relationship between green finance intensity and climate resilience and reduction in carbon-intensity? What strategic aspects need to be considered in addition to intensity, like adaptation share, renewable share, diversification etc.? As intensity increases is there a high decrease in returns to green finance? (RQ4)

Literature Review

The first set of studies determines whether green finance is measurable or measurable. The first set of studies is to gauge if green finance is measurable or measurable. The N-11 and BRICS countries are analysed to study the relationship between green finance and climate change mitigation through difference-in-differences approach (Nawaz et al., 2021). Many quasi-natural experiments are used to explore the effects of green finance on industrial low-carbon transition in China and the regional evidence is used to explore the linkage between green finance, renewable energy development and climate change in China (Ren et al., 2023; Sun et al., 2023). Further research provides nuance as to whether green finance acts as a force against climate change mitigation, specifically in the sense that it has a one-sided effect of climate change investments in renewable energy and as regards research and development (Zhang et al., 2022). The common theme is that of designing with a policy focus to isolate the effects of policy and consideration of how finance acts.

The second group focuses on the market and institutional environment which enables green finance. The current literature on the characteristics of green bond markets focuses on how these can contribute to green finance in the post-COVID-19 world, and other literature looks at green innovation and finance in Asia (Taghizadeh-Hesary et al., 2021; Tolliver et al., 2021). Innovation in green finance has been linked to regional green development and green finance's impact on financial institutions' sustainability performance is discussed in Bangladesh research (Wang et al., 2021; Zheng et al., 2021). These works indicate that developing green finance requires a combination of instruments, innovation capacity, and institutional setting to be able to achieve what can in the context of development. Review articles are a compilation of this data. The findings on green finance and carbon emission reduction are carried out by systematic literature reviews and a bibliometric and systematic review research to explore the emerging themes in green finance (Mudalige, 2023; Zhang et al., 2022). Both indicate a shift from definitions towards outcomes, and increasing attention to heterogeneity in contexts.

The following strands drive three expectations that are used to analyze these: 1) financing models should vary significantly across levels of income, 2) the intensity of green finance would be expected to be positively, but not directly, correlated to Resilience, and 3) the composition of financing, and not just the amount of it, should be important.

Data and Analytical Strategy

The study employs a cross-sectional comparison between 96 economies in four groups—advanced economies (n = 30), emerging Asia (n = 26), other emerging economies (n = 22), and low income economies (n = 18). The six instruments of green finance are documented for each economy by the percentage of the green finance portfolio that is invested in the instruments. The green finance intensity index (GFI) and the climate resilience index (CRI) are both composite indices ranging from 0 to 100. The carbon-intensity reduction (CIR) is the reduction in emissions per dollar of output during the study period (percentage). The Herfindahl concentration of the six shares is rescaled to 0–100 using an instrument diversification index (DIV) as the instrument and log GDP per capita is used as the income control. One-way ANOVA, Pearson correlation and ordinary least squares regression with a quadratic term of GFI, and collinearity terms (variance inflation factors) were performed, followed by the comparison of tertiles of GFI. The numbers presented in section 4 are hypothetical to illustrate the analysis process and are not to be considered as empirical data to be used for the results.

Results

Portfolio Composition Across Economy Groups

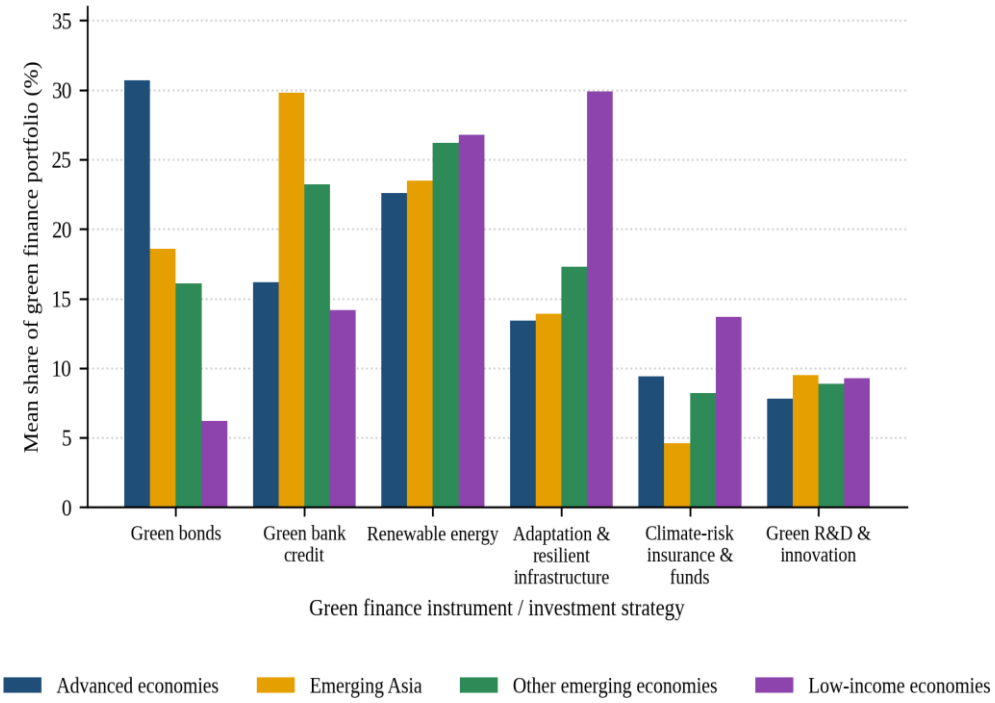


Fig. 1: Mean Share of Green Finance Portfolio by Instrument and Economy Group

The horizontal axis represents the six instruments and the vertical axis represents the mean of each instrument's share of the portfolio, in percentage (Fig. 1). The key below the graph shows each of the four economy groups with a different colour. The advanced economies rely on green bonds (30.7 percent), the emerging Asia on green bank credit (29.8 percent), the low-income economies on adaptation and resilient infrastructure (29.9 percent) and climate-risk insurance and funds (13.7 percent). The strategy which is adopted by the majority of groups is renewable energy, between 22.6 and 26.8 per cent. The pattern is that the deeper a capital market is, the more bonds are supported; the greater the reliance of the bank, the more credit will be supported; and adaptations-oriented and concessional channels will support economies with limited capital sources.

Table 1: Portfolio Share (%) of Each Instrument by Economy Group

Instrument	Advanced	Emerging Asia	Other emerging	Low-income	ANOVA p
Green bonds	30.7	18.6	16.1	6.2	< .001
Green bank credit	16.2	29.8	23.2	14.2	< .001
Renewable energy	22.6	23.5	26.2	26.8	.130
Adaptation & resilient infrastructure	13.4	13.9	17.3	29.9	< .001
Climate-risk insurance & funds	9.4	4.6	8.2	13.7	< .001
Green R&D & innovation	7.8	9.5	8.9	9.3	.658

Table 1 shows that four of the six indicators are significantly different between groups – green bonds, green bank credit, adaptation and resilient infrastructure, and climate-risk insurance and funds (all with $p < .001$). The distinction between renewable energy and green research and innovation is not significant ($p = .130$), but rather it is in the source of funding and in the amount of funding that goes to adaptation.

Group Profile

Table 2: Green Finance Intensity, Resilience, and Carbon-Intensity Reduction by Group, Mean (SD)

Economy group	n	GFI (0–100)	CRI (0–100)	CIR (%)
Advanced economies	30	70.5 (7.3)	58.6 (5.6)	12.8 (4.2)
Emerging Asia	26	60.7 (9.0)	53.2 (7.7)	11.0 (3.2)
Other emerging economies	22	48.0 (8.3)	46.5 (8.2)	11.7 (3.6)
Low-income economies	18	29.7 (9.8)	34.7 (8.5)	8.7 (4.0)
All economies	**96**	**55.0 (17.0)**	**49.9 (11.2)**	**11.3 (4.0)**

The gradient is clearly shown in table 2. Green finance intensity falls from 70.5 in advanced economies to 29.7 in low-income economies, $F(3, 92) = 95.29$, $p < .001$, and climate resilience follows the same order, from 58.6 to 34.7, $F(3, 92) = 42.61$, $p < .001$. The difference in the carbon-intensity reduction is not as great, but is still significant, $F(3, 92) = 4.68$, $p = .004$. Resilience gaps between groups are thus much greater than mitigation gaps, in line with understanding that Resilience is more dependent on the ongoing investment capacity.

Green Finance Intensity and Climate Resilience

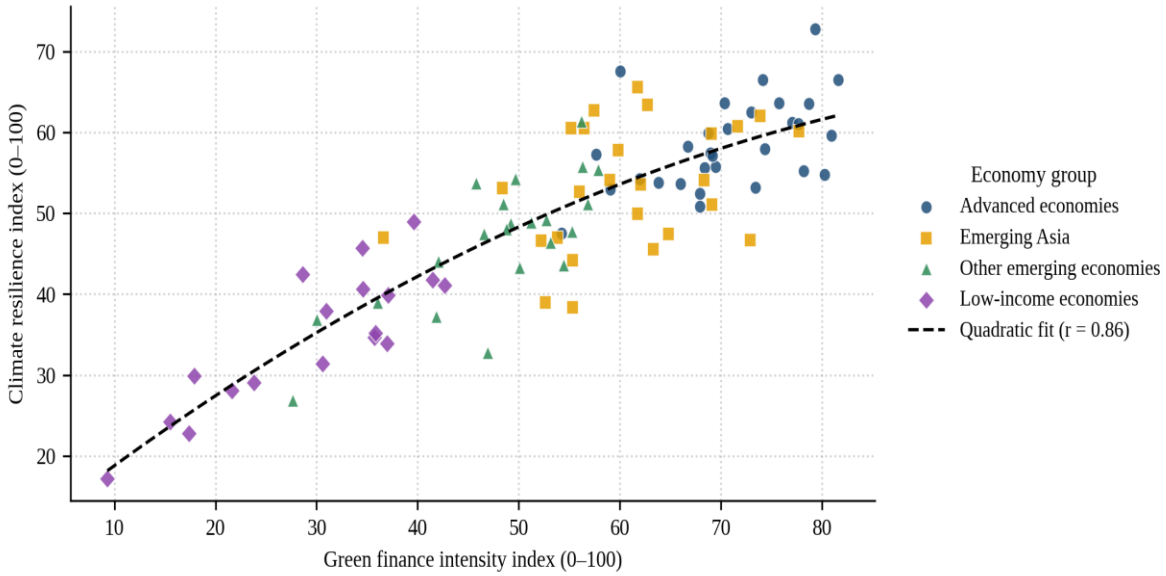


Fig. 2: Relationship between Green Finance Intensity and Climate Resilience by Economy Group

Fig. 2 presents a significant positive association between green finance intensity and climate resilience ($r = 0.86$, $p < .001$). In fact, the positive association between the two variables has a gradually flattening trend, which occurs at higher values of green finance intensity. Based on the quadratic fitted curve, each one-point increase in intensity corresponds to 0.74 points of Resilience at the value of intensity close to 30 and decreases to 0.32 points at

the intensity close to 80. The countries with low income are typically found in the low end of the two measures, while the countries with advanced economies are found in the high end of both green finance intensity and climate resilience. The emerging economies in Asia are located between the two extremes and vary in terms of Resilience.

Correlates and Drivers of Resilience

Table 3: Pearson Correlation Matrix of Strategy and Outcome Variables (n = 96)

Variable	1	2	3	4	5
1. Green finance intensity (GFI)	1	—	—	—	—
2. Adaptation share (ADP)	-0.60*	1	—	—	—
3. Renewable energy share (REN)	-0.24*	-0.07	1	—	—
4. Diversification index (DIV)	-0.02	-0.06	-0.16	1	—
5. Climate resilience (CRI)	0.86*	-0.39*	-0.26*	0.09	1

Note: * $p < .05$. Coefficients without an asterisk are not significant.

Based on table 3, the following can be seen: The most significant correlation is with Resilience ($r = 0.86$), and there is also a correlation with carbon-intensity reduction ($r = 0.41$, $p < .001$) in the green finance intensity. As at the bivariate level, there is a negative correlation between adaptation share and Resilience ($r = -0.39$) and intensity ($r = -0.60$), as low-income economies invest more in adaptation, but less in total. There is a weak and insignificant bivariate correlation between the renewable share and carbon-intensity reduction ($r = 0.21$, $p = .042$), while there is no bivariate correlation between diversification and Resilience. The regression in table 4 splits these effects since these are partly compositional in nature.

Table 4: OLS Regression Predicting the Climate Resilience Index

Predictor	B	SE	β	t	p	VIF
Intercept	-5.576	16.713	—	-0.33	.739	—
Green finance intensity (centred)	0.499	0.060	0.75	8.30	< .001	3.88
Green finance intensity squared	-0.005	0.002	-0.18	-3.34	.001	1.33
Adaptation share	0.358	0.080	0.28	4.47	< .001	1.88
Renewable energy share	0.034	0.078	0.02	0.43	.669	1.21
Instrument diversification	0.325	0.156	0.10	2.08	.040	1.06
Log GDP per capita	2.179	0.763	0.24	2.86	.005	3.44

As reflected in table 4, 81% of the variance in Resilience is explained by the model. The largest standardized effect ($\beta = 0.75$) is the green finance intensity, and the negative squared term ($p = .001$) indicates that there is a negative relationship, therefore answering RQ4. However, when intensity and income are controlled for, adaptation share turns into a bivariate positive predictor ($B = 0.36$, $p < .001$) which, when controlling for the other bivariate negative predictors, is associated with approximately 0.36 resilience points for every additional percentage point of the portfolio directed to adaptation. Renewable share is not significant and negative ($p = .669$), whereas diversification is positive and significant ($p = .040$) which indicates that renewable investment is important only for reducing carbon-intensity and not for Resilience as measured here. Income still is a big control ($p = .005$). If the variance inflation factors are < 3.9 then collinearity is acceptable.

Returns by Intensity Tier

Table 5: Outcomes by Tertile of Green Finance Intensity

Tertile	n	Mean GFI	Mean CRI	Mean CIR (%)	Adaptation share (%)
Low intensity	32	35.4	38.9	9.4	24.3
Middle intensity	32	57.0	52.4	11.5	16.1
High intensity	32	72.7	58.3	12.9	12.1

The result is presented in a simple form in table 5; it shows that the diminishing returns are decreasing as the quality of the factor increases. The reduction in scores on moving from the low to middle tertile is indicative of Resilience by 13.5 points, whereas the increase in scores on moving from the middle to high tertile is by only 5.9 points. The adaptation share decreases from 24.3 per cent in the low tier to 12.1 per cent in the high tier, indicating that economies with the lowest amount of finance allocate most of their finance to adaptation, and yet still lag behind, having limited finance overall.

Within-Group Consistency

Table 6: Within-Group Association between Green Finance Intensity and Resilience

Economy group	n	r (GFI, CRI)	p	Slope (CRI per GFI point)	r (ADP, CRI)
Advanced economies	30	0.50	.005	0.38	0.39
Emerging Asia	26	0.38	.055	0.32	0.37
Other emerging economies	22	0.76	< .001	0.75	0.26
Low-income economies	18	0.86	< .001	0.74	0.01

Note: ADP = adaptation share of the portfolio. Slopes are from simple regressions run separately within each group.

In order to determine if the pooled result was due to differences between the groups only, the intensity–resilience relation was estimated within each group as well (see table 6). All four groups have a positive association and three of them are significant (emerging Asia: r = 0.38, p = .055 is positive but close). Other emerging economies (0.75) and low-income economies (0.74) have the steepest slopes, whereas advanced economies (0.38) and emerging Asia (0.32) have slopes that are about half as steep. This ordering is similar to that shown in table 4 and table 5 and it shows that added finance is most effective when intensity begins low. There is a positive correlation between the adaptation share and Resilience in developed economies (r = 0.39, p = .032) but not in other economies, suggesting a need to be cautious of establishing adaptation expenditure as an alternative to overall mobilization of capital in the poorest economies.

Summary of Findings by Research Question

Table 8: Principal Findings for Each Research Question

RQ	Principal finding
RQ1	Financing models diverge: green bonds 30.7% of portfolios in advanced economies versus 6.2% in low-income economies; adaptation 29.9% in low-income versus 13.4% in advanced economies.
RQ2	Intensity and Resilience are strongly related (r = 0.86); intensity also relates to carbon-intensity reduction (r = 0.41).
RQ3	Adaptation share (p < .001) and diversification (p = .040) add explanatory power; renewable share (p = .669) does not predict Resilience.
RQ4	Returns diminish: marginal gain falls from 0.74 to 0.32 resilience points per intensity point between GFI = 30 and GFI = 80.

Table 8 demonstrates that an empirical answer is provided for each research question. The responses collectively paint a mosaic image of a climate resilient community that is not consistent across the board, but rather the case of the scales, composition, and context, where each aspect is integral to the community's overall Resilience, and no single scale or volume target alone is sufficient.

Synthesis: An Investment Logic for Climate Resilience

The results have been combined into one logic in Fig. 3. Capital is mobilized using instruments that are appropriate to the depth of the local markets; it is channeled into investment strategies; and translated into Resilience and less carbon intensity, all of which are shaped by enabling conditions. The pathway indicates relationships in the data, but does not imply causation.

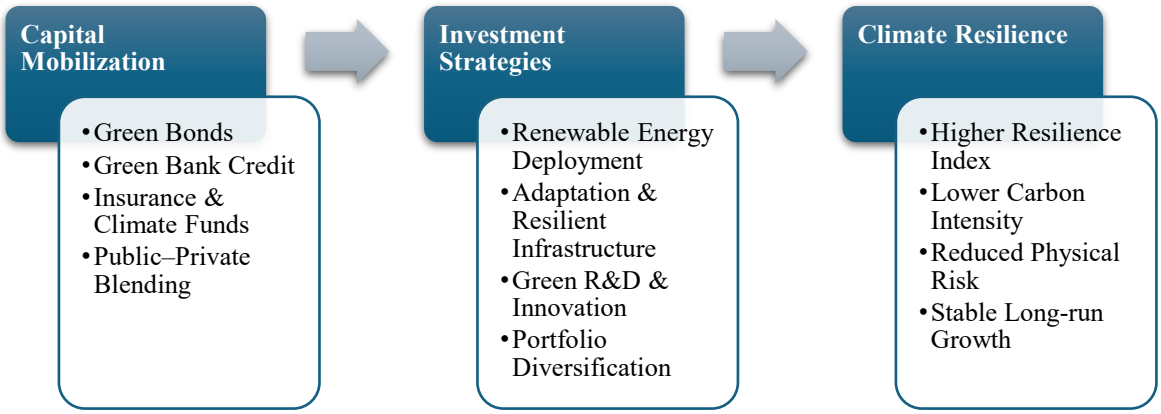


Fig. 3: Investment Logic Linking Green Finance Mobilization to Climate Resilience

The instruments for capital raising are listed on the left, the strategies that the capital funds are listed in the middle, and the outcomes that are examined are listed on the right (Fig. 3). The strategy stage is influenced by enabling conditions – i.e., taxonomy, policy credibility, institutional capacity and income level – with the dashed arrow indicating this influence, and why the same instrument has varying impacts across groups.

Discussion and Strategic Roadmap

Findings indicate that green finance is not a single policy, but a combination of different policies, where the financial structure determines which combination to adopt. In advanced economies, bond markets can be a good avenue; in emerging Asian economies, banking systems can be a good avenue; and in low-income economies, concessional and adaptation-oriented channels can be a good avenue. Across all of the tables, the highest leverage for Resilience is to increase the overall intensity, but the next one down is to increase the proportion of capital to adaptation, the one most likely to be within the control of policy makers in economies that are capital constrained.

The practical warning of diminishing returns. The more intense the intensity, the less the resilience gains from increasing the volume, and the more the marginal capital will be better invested in adapting to the gaps in adaptation, insurance, and innovations. On the other hand, the intensity at the steep part of the curve is at low intensities where there is also the highest payoff from capital mobilization in the form of blended financing and credible green taxonomies. The fact that Resilience is not predicted by renewable share despite its connection to carbon-intensity reduction, indicates a need for different funding lines for mitigation and adaptation and different metrics for measuring their performances. This is converted to priorities by group in table 7. Another implication has to do with measurement. The carbon-intensity reduction shortfall faced by the low-income economies will be underestimated if it is only measured by the differences between the mitigation gaps of the groups. Investors, development banks and regulators would benefit from reporting on resilience indicators together with emissions data, and from reporting the percentage of green portfolios which are specifically assigned to adaptation. This type of reporting would also enable greater visibility of the focus on headline green finance volume on instruments that have minimal physical risk. The data can only suggest a sense of institutional credibility. The groups with the least intense are the groups in which green taxonomies, disclosure rules and public guarantees are least developed and green taxonomies and disclosure rules allow for private capital to enter at acceptable risk. Blended finance therefore is a stepping stone to market-based instruments rather than a replacement for them, as public or concessional funds take up some of the initial risk. The more vulnerable the adaptation needs the more concessional funding that can be allocated to bonds and credit, thereby shifting the portfolio mix towards these assets over time with increasing intensity.

Table 7: Strategic Priorities by Economy Group Derived from the Results

Economy group	Priority strategy	Supporting evidence
Advanced economies	Shift marginal capital from further volume to adaptation, insurance, and innovation quality	Highest intensity (70.5) and flattest returns (Fig. 2)
Emerging Asia	Broaden from bank credit toward bond markets and risk-sharing instruments	Credit share 29.8% versus bonds 18.6% (Table 1)
Other emerging economies	Raise intensity through blended finance and a credible green taxonomy	Intensity 48.0, in the steeper part of the curve
Low-income economies	Mobilize concessional capital and protect adaptation allocations	Largest adaptation share (29.9%) but lowest intensity (29.7)

As can be seen in table 7, there is no one-to-one prescription and each priority corresponds to a certain empirical pattern. Therefore, the goal of increased intensity should be paired with instrument mixes based on the group and indicators for mitigation and indicators for Resilience should be monitored.

Implications for Policy and Investment Practice

- Scale first, low intensity. Blended finance, guarantees, and credible green taxonomies should be prioritized in the other emerging and low-income economies (especially below the mid-range) due to the steepest gains in Resilience.
- Protect adaptation allocations. Adaptation share is a key positive driver when controlling for income and intensity, and therefore should be ring-fenced as a separate project from mitigation – not be displaced by it – and be included in green portfolios.

- Install the instrument on the market. There are three types of bond-led, credit-led and concessional models, each indicative of local monetary depth; reforms should build financial depth gradually and should be different from another group's mix of instruments.
- Report recovery along with carbon emissions. Combined reporting will bring out the deficiencies that are masked by carbon-based measures, and direct marginal capital investments in high intensity economies toward quality.

Limitations and Future Research

There were several limitations with the analysis. The design is cross-sectional, which means that associations cannot assert that green finance leads to increased Resilience; the figures are presented in composite indices, which are subject to design choices; variation within the composite indices can only be captured by four groups; and, as mentioned in Section 3, the figures reported are illustrative and need to be validated with primary data. The portfolios described in the shares of the instrument are not only for a moment in time but fail to show how mixes change as market deepens. Panel models and quasi-experimental methods would be useful to further explore causal effects and to test the climate-resilience outcomes of each instrument at the sector level, as well as how the instruments modify climate-risk disclosure and taxonomies.

Conclusion

The present study has assessed the connection between green finance, investment approaches, and climate resilience in 96 countries. The results indicate that there are significant differences in the models of financing depending on the income group due to the differences in the level of development of financial markets, institutions, and investment opportunities. The indicator of green finance intensity correlates significantly with the level of climate resilience. Nevertheless, the correlation weakens with the increase of green finance intensity due to the presence of decreasing marginal effect. It means that an increase in the volume of green finance is highly beneficial for the Resilience when the financing is scarce; however, further increases in highly financed countries might be less beneficial. At the same time, the share of adaptation financing explains the variance in addition to green finance intensity and the income level. In practice, achieving climate resilient economies demands a two-pronged approach that entails not only scaling up green finance in financially disadvantaged economies but also consciously allocating resources to adaptation efforts. Yet, it is important to use the appropriate financing tools based on the development level and sophistication of the financial markets in a particular country. The paper shows the significance of both scaling up and allocation of the funding as well as appropriate instruments used for this purpose. Further research can investigate institutional variables at the country level and draw longitudinal conclusions regarding the impact of various green financing instruments on climate resiliency.

References

Akomea-Frimpong, I., Adeabah, D., Ofosu, D., & Tenakwah, E. J. (2022). A review of studies on green finance of banks, research gaps and future directions. *Journal of Sustainable Finance & Investment*, *12*(4), 1241-1264. https://doi.org/10.1080/20430795.2020.1870202

Bhattacharyya, R. (2022). Green finance for energy transition, climate action and sustainable development: overview of concepts, applications, implementation and challenges. *Green Finance*, *4*(1), 1-35. https://doi.org/10.3934/GF.2022001

Cai, R., & Guo, J. (2021). Finance for the environment: A scientometrics analysis of green finance. *Mathematics*, *9*(13), 1537.https://doi.org/10.3390/math9131537

Chițimiea, A., Minciu, M., Manta, A. M., Ciocoiu, C. N., & Veith, C. (2021). The drivers of green investment: A bibliometric and systematic review. *Sustainability*, *13*(6), 3507.https://doi.org/10.3390/su13063507

Gao, L., Guo, K., & Wei, X. (2023). Dynamic relationship between green bonds and major financial asset markets from the perspective of climate change. *Frontiers in environmental science*, *10*, 1109796. https://doi.org/10.3389/fenvs.2022.1109796

Huang, H., & Zhang, J. (2021). Research on the environmental effect of green finance policy based on the analysis of pilot zones for green finance reform and innovations. *Sustainability*, *13*(7), 3754. https://doi.org/10.3390/su13073754

Lin, C., Zhang, X., Gao, Z., & Sun, Y. (2023). The development of green finance and the rising status of China's manufacturing value chain. *Sustainability*, *15*(8), 6395. https://doi.org/10.3390/su15086395

Ma, H., Miao, X., Wang, Z., & Wang, X. (2023). How does green finance affect the sustainable development of the regional economy? Evidence from China. *Sustainability*, *15*(4), 3776.https://doi.org/10.3390/su15043776

Meo, M. S., & Abd Karim, M. Z. (2022). The role of green finance in reducing CO2 emissions: An empirical analysis. *Borsa Istanbul Review*, *22*(1), 169-178. https://doi.org/10.1016/j.bir.2021.03.002

Mohanty, S., Nanda, S. S., Soubhari, T., S, V. N., Biswal, S., & Patnaik, S. (2023). Emerging research trends in green finance: A bibliometric overview. *Journal of Risk and Financial Management*, *16*(2), 108. https://doi.org/10.3390/jrfm16020108

Mudalige, H. M. N. K. (2023). Emerging new themes in green finance: a systematic literature review. *Future Business Journal*, *9*(1), 108. https://doi.org/10.1186/s43093-023-00287-0

Nawaz, M. A., Seshadri, U., Kumar, P., Aqdas, R., Patwary, A. K., & Riaz, M. (2021). 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

Ren, Y., Yu, J., Xu, S., Tang, J., & Zhang, C. (2023). Green finance and industrial low-carbon transition: Evidence from a quasi-natural experiment in China. *Sustainability*, *15*(6), 4827. https://doi.org/10.3390/su15064827

Sun, Y., Bao, Q., & Taghizadeh-Hesary, F. (2023). Green finance, renewable energy development, and climate change: evidence from regions of China. *Humanities and Social Sciences Communications*, *10*(1), 107. https://doi.org/10.1057/s41599-023-01595-0

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

Tolliver, C., Fujii, H., Keeley, A. R., & Managi, S. (2021). Green innovation and finance in Asia. *Asian Economic Policy Review*, *16*(1), 67-87. https://doi.org/10.1111/aepr.12320

Wang, Y., Zhao, N., Lei, X., & Long, R. (2021). Green finance innovation and regional green development. *Sustainability (2071-1050)*, *13*(15), 8230. https://doi.org/10.3390/su13158230

Zhang, D., Mohsin, M., & Taghizadeh-Hesary, F. (2022). Does green finance counteract the climate change mitigation: Asymmetric effect of renewable energy investment and R&D. *Energy Economics*, *113*, 106183. https://doi.org/10.1016/j.eneco.2022.106183

Zhang, Z., Liu, Y., Han, Z., & Liao, X. (2022). Green finance and carbon emission reduction: A bibliometric analysis and systematic review. *Frontiers in Environmental Science*, *10*, 929250. https://doi.org/10.3389/fenvs.2022.929250

Zheng, G. W., Siddik, A. B., Masukujjaman, M., & Fatema, N. (2021). Factors affecting the sustainability performance of financial institutions in Bangladesh: The role of green finance. *Sustainability*, *13*(18), 10165. https://doi.org/10.3390/su131810165