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Integrating climate finance and disaster-triggered instruments for climate resilience: A systematic review

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ABSTRACT

The growing severity of natural disasters due to more unpredictable climate change disrupts the economic system requiring new financial tools to handle the related risks. Climate finance has become essential for aiding disaster risk reduction and preparedness efforts. Nonetheless, obstacles like insufficient alignment of financial tools with resilience approaches, governance issues, and restricted community capabilities impede its efficacy. This study systematically examines the role of climate finance in funding disaster risk reduction and preparedness efforts and how financial instruments activated by disasters can enhance the effectiveness of these initiatives. This research utilizes a systematic literature review that adheres to the preferred reporting items for systematic reviews and meta-analysis framework, examining 27 peer-reviewed publications from Scopus and Web of Science. The analysis indicates that financial tools activated by disasters can lower financial losses by as much as 25% in climate risk situations. Essential results emphasize the significance of government policies in enhancing these tools, the involvement of private sector funding, and the necessity for region-specific risk evaluation frameworks. Gaps in execution remain, especially in developing nations, arising from funding shortages, a $90 trillion deficit for green infrastructure by 2025, and governance inefficiencies. The incorporation of climate funding and disaster-related tools greatly improves community resilience and the stability of financial systems. This study can inform policy formulation for integrating climate finance governance to promote the swift advancement of financial instrument innovation, enhance local resilience, guarantee inclusive, and sustainable funding.

1. Introduction

The increasingly unpredictable climate change phenomenon has triggered changes in financial instruments. These financial instruments must be innovatively designed to provide

funding support to manage the financial risks associated with natural disasters and to provide a rapid response in post-disaster recovery efforts. The Inter-American Development Bank (IDB) developed a Contingent Credit Facility (CCF) to ensure that financial support is available in the immediate aftermath of a disaster (Collich et al., 2020). Integrating Climate Disaster Risk Finance (CDRF) is an integral part of disaster risk management planning. It provides a framework for governments to manage the financial risks associated with climate change (Cisse, 2021). Central European countries collaborate on an insurance payment mechanism to manage flood risks. This mechanism was implemented to reduce the impact of fiscal losses and to ensure a rapid post-disaster economic recovery process (Pollner, 2012). These innovations are a part of the climate finance system.

Climate finance is a financial component currently the focus of global finance (Delmon, 2024). This idea has changed over the last few decades, prompting international transfers of capital from advanced to emerging nations and engaging multilateral development institutions such as the World Bank, International Finance Corporation (IFC), regional development banks, and the private sector to aid climate change mitigation and adaptation initiatives (Mohamadi, 2021; Michaelowa & Sacherer, 2022). Various forms of climate finance include green bonds (Bracking, 2019), targeted lending (Bhandary et al., 2021), carbon, capture, usage, and storage (CCUS) (Warren, 2019), blended finance (Purkayastha & Sarkar, 2021), international climate funds (Steckel et al., 2017), and weather-indexed insurance (Bhandary et al., 2021) were developed specifically to address the economic instability that has become apparent due to the increasing frequency and intensity of natural disasters.

Economic instability has been significantly affected by the increasing frequency and intensity of climate-related natural disasters. Coronese et al. (2019) revealed that economic damage caused by natural disasters has increased with frequency and severity. This suggests that climate change exacerbates natural disasters, which encourages the establishment of financial systems to manage disaster risks and economic impact (Zhou et al., 2023). Figure 1 shows alarming historical data quoted from Ritchie and Rosado (2024) to reinforce this explanation.

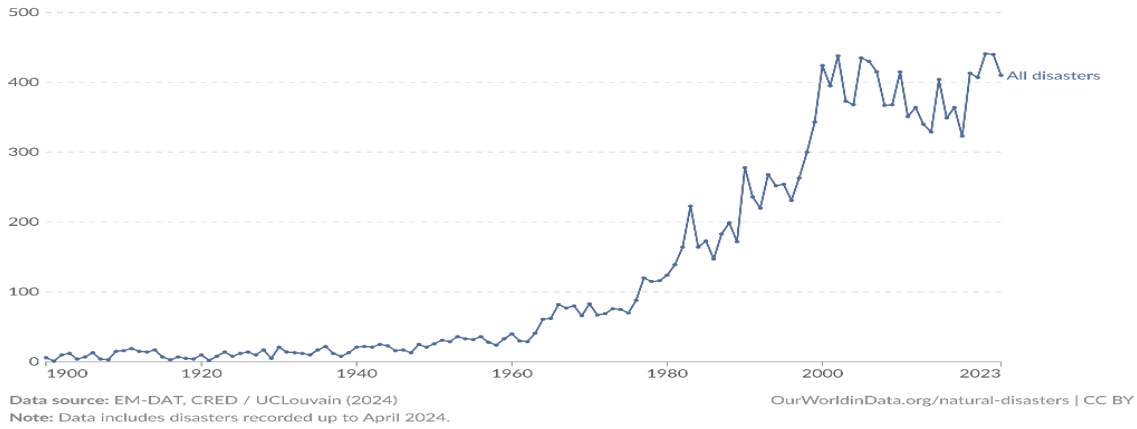

Figure 1. Worldwide Natural Disaster Data

Since the mid-20th century, there has been a significant increase in the number of documented natural disasters worldwide. In the early 1960s, the world experienced fewer than 100 disasters annually. However, this number has increased to over 400 events each year during the first decade of the 21st century and continues to increase. This pattern of rising frequency directly indicates the growing number of physical hazards confronting the global economy. Furthermore, a report from The United Nations Framework Convention on Climate Change (UNFCCC) indicated that the frequency of natural disasters has risen five

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times in the last 50 years because of climate change and increased instances of extreme weather. Each disaster carries the potential for significant economic losses; therefore, the spike in their frequency inherently creates a more unstable and high-risk economic environment. Natural disasters, such as droughts, extreme temperatures, floods, landslides, storms, and forest fires, not only cause direct damage to the environment but also impact economic systems in the long term, especially in developing countries where financial mechanisms are often inadequate (Kousky, 2014).

This phenomenon is the main driver behind the need to develop resilient financial systems such as climate finance, specifically designed to manage disaster risks and finance the transition to a safer and more sustainable future. Hallegatte (2016) reveals that countries with sound financial systems and access to risk insurance recover faster and experience fewer losses in the long run. The government's role as a policymaker is indispensable in supporting post-disaster relief, recovery, and reconstruction efforts (Rini, 2020). Policymakers need to prioritize developing and implementing financial instruments that can minimize the impact of natural disasters, such as promoting insurance mechanisms in disaster-prone areas, investing in adaptive infrastructure, and implementing early warning systems to mitigate the risks posed. In addition, it is necessary to identify climate-related fiscal risks to maintain economic stability and ensure adequate funding for disaster response efforts. These challenges highlight the need for empirical evidence of the effectiveness of various financial instruments in reducing disaster risk. Existing studies still address the potential benefits of financial instruments, such as insurance and bonds, so data and research findings on their real-world impact are limited, especially in different socioeconomic contexts (Bayer & Stigler, 2015).

Although individual studies explore specific instruments or regional challenges, there is a noticeable gap in the literature regarding a comprehensive synthesis of how climate finance broadly and disaster-triggered instruments are being integrated, and what the collective evidence suggests about their potential synergies and practical limitations. Consequently, the current scientific landscape lacks a systematic literature review (SLR) that maps existing knowledge, identifies relevant research themes, and highlights critical knowledge gaps at the intersection of these rapidly evolving financial domains. This study aims to fill this gap by providing such an SLR, offering a unique and timely consolidation of evidence that is crucial for informing future research directions and policy interventions in an era demanding robust and integrated financial solutions for climate resilience, and to review and synthesize the strategic role of disaster-induced financial instruments in enhancing the effectiveness of such initiatives. This study developed targeted research questions to guide a thorough review process. The goal is to systematically analyze these intricate interactions and deliver a structured, evidence-based synthesis that fills recognized gaps. The research questions below are the foundation for a systematic review of pertinent studies.

RQ1: How can the integration of climate finance and disaster-triggered financial instruments enhance the effectiveness of disaster risk reduction and increase community resilience to climate change impacts?

RQ2: What are the key barriers to implementing climate finance mechanisms, and how can disaster-triggered financial instruments help overcome these barriers?

A systematic literature review employed a structured method to address these research questions. In tackling RQ1, the review emphasizes recognizing and consolidating conceptual frameworks, definitions, and classifications that illustrate the connection between climate finance and financial instruments triggered by disasters. This involves assessing empirical data on how tools, such as contingent credit, parametric insurance, and catastrophe bonds, improve the efficiency of climate finance approaches in mitigating the effects of climate disasters and bolstering community resilience, focusing on indicators such as adaptive

capacity, vulnerability reduction, and recovery. As for RQ2, the review identifies key documented challenges in implementing climate finance and evaluates how disaster-triggered financial instruments can overcome these barriers and improve the overall effectiveness of the climate adaptation and mitigation financing system. This methodological approach ensured that each research question was thoroughly investigated using evidence from the selected literature collection.

2. Literature Review

2.1. Climate Finance Framework

Climate finance plays a crucial role in gathering resources to aid mitigation and adaptation initiatives aimed at lowering carbon emissions, enhancing greenhouse gas uptake, and bolstering the resilience of human ecological systems to the adverse effects of climate change (Pittel & Rübbelke, 2013; Dubash, 2019). The theoretical foundation of climate finance is deeply rooted in the environmental economics paradigm, which conceptualizes climate change as a manifestation of global market failure (Khan & Munira, 2021). This phenomenon occurs because of the negative externalities of greenhouse gas emissions and the public good characteristics of the climate. Market failure resulting from climate change necessitates coordinated joint action, which can be understood through regime theory and global collaboration (Dent, 2022). This framework explains the formation of global institutions, such as the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and the Paris Agreement in 2015, which are based on the principle of shared but differentiated responsibilities according to each country's capacity and serve as a reference for the distribution of resources and mitigation and adaptation burdens (Naser & Pearce, 2022).

2.2. Disaster-Triggered Financial Instruments Framework

Disaster-activated financial instruments are funding instruments designed to be deployed quickly and efficiently after a natural disaster (Tong & Zhang, 2020). Improving climate financing approaches will strengthen community resilience, especially in developing nations, against disasters, and lessen reliance on foreign assistance or reallocating funds from other areas (Chirisa et al., 2021). The theoretical foundation of financial instruments activated by disasters is firmly rooted in the disaster risk-financing framework, which emphasizes the importance of ex-ante financing strategies to enhance financial resilience and reduce post-disaster economic impacts (Grove, 2021). Risk transfer theory is central to this framework, explaining how catastrophe bonds and parametric insurance transfer part of the risk burden from governments or corporations to efficient capital markets (Zhao et al., 2021). The creation of disaster-focused financial tools is also motivated by the need to overcome the shortcomings of conventional markets in delivering liquidity rapidly and effectively following a disaster. In this context, theories regarding information asymmetry and moral hazard play a crucial role in promoting the adoption of innovative trigger mechanisms such as parametric triggers, which are designed to mitigate these issues (Strausz, 2017).

2.3. Catastrophe Risk Layering Theory

Catastrophe risk layering theory provides a comprehensive conceptual framework for understanding the interlinkages between climate finance and disaster-triggered financial instruments and their strategic roles in building resilience to climate disasters (Shi et al., 2020). Integrating climate finance into this theoretical framework can ensure that resources are allocated efficiently for post-disaster responses and ex-ante investments in risk reduction and adaptation, which are the focus of climate finance.

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Through this approach, disaster-triggered financial instruments become faster and more predictive channels for climate finance, amplify financial impacts, accelerate post-disaster recovery, and enhance community resilience (Levy & Herst 2018). According to Cummins and Mahul (2009), catastrophe risk-layering theory aids in understanding how a suitable mix of financial tools can offer financial safeguards and enhance government systems in addressing financial risks associated with climate change and disasters. Thus, catastrophic risk layering theory is a crucial theoretical basis for assessing the relationships, efficiency, integration, and difficulties within climate financing mechanisms and disaster-related financial instruments.

3. Research Methods

3.1. Research Design

This research investigated the connections between polychronic orientation, job satisfaction, distributive justice, and turnover intention among front-line retail employees working on the front lines. The population comprised 3.522 frontline staff members of the Indomarco Prismatama Company (Indomaret) Bali Branch. A purposive sample was employed to choose participants with at least six months of experience in frontline roles. The sample size was calculated using the Slovin algorithm with a 10% margin of error, to obtain 100 responses. Polychronic orientation was treated as the independent variable in this study, with job satisfaction and distributive fairness mediating the relationship, and turnover intention as the dependent variables. A 5-point Likert scale was employed to assess these attributes, with participants rating their agreement from 1 (strongly disagree) to 5 (strongly agree). Figure 2 shows the stages of the SLR method applied in the studies by Bonfield et al. (2018) and Sauer and Seuring (2023).

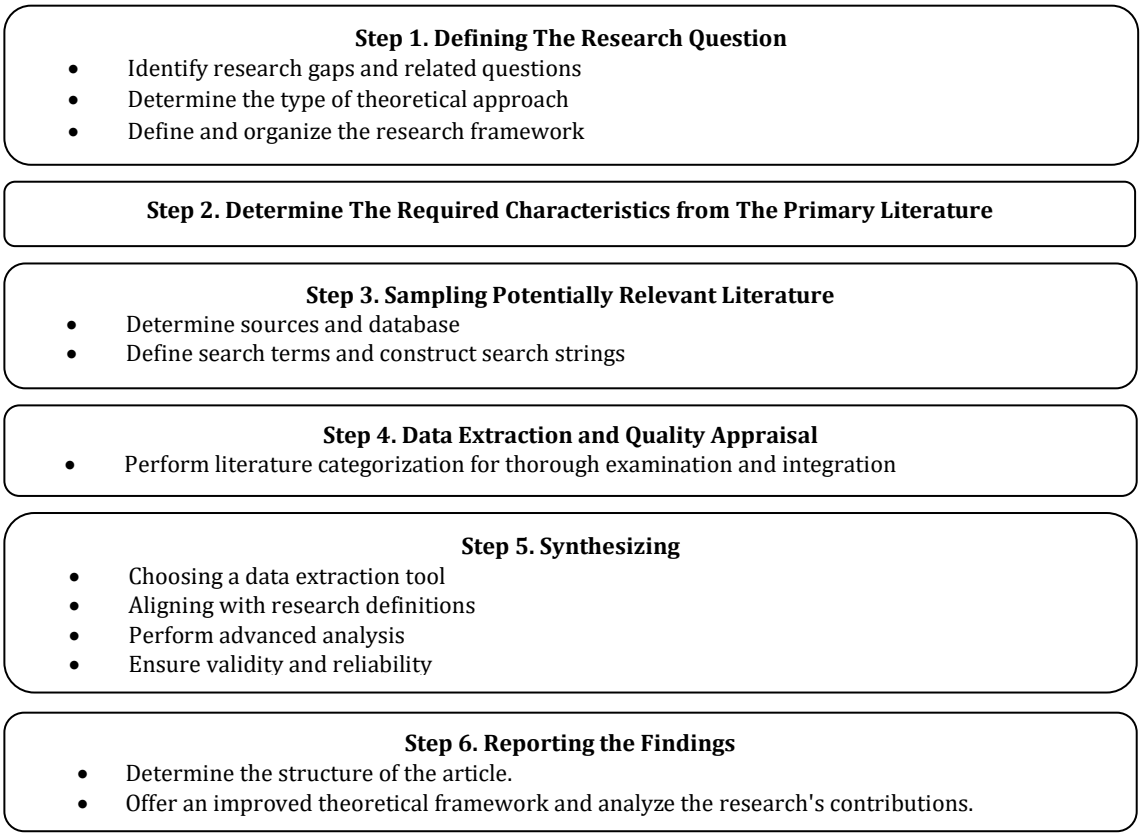

Figure 2. Steps in the SLR Method

3.2. Data Collecting Method

Scopus and Web of Science were the database sources used in this study. This is because Scopus and Web of Science index millions of articles from various disciplines and thousands of reputable journals worldwide, allowing researchers to access broad and diverse literature (Song et al., 2016). In addition, both sources contain reputable and internationally recognized journals for the quality of papers indexed in all research fields (Bourcet, 2020). The initial stage was to identify keywords pertinent to the research subject, enabling the discovery of articles for analysis (Mahood et al., 2014). The database search strategy in this study used the keywords (All = ("climate finance" or "climate risk" or "disaster risk" or "climate change" or "disaster")) and (All = ("disaster instruments" or "climate instruments")). These keywords were gathered to assist researchers in ensuring that their research was systematic, efficient, and yielded accurate and pertinent outcomes. The search was conducted on October 29, 2024. Figure 3 shows the recommended reporting item framework for the systematic reviews and meta-analyses.

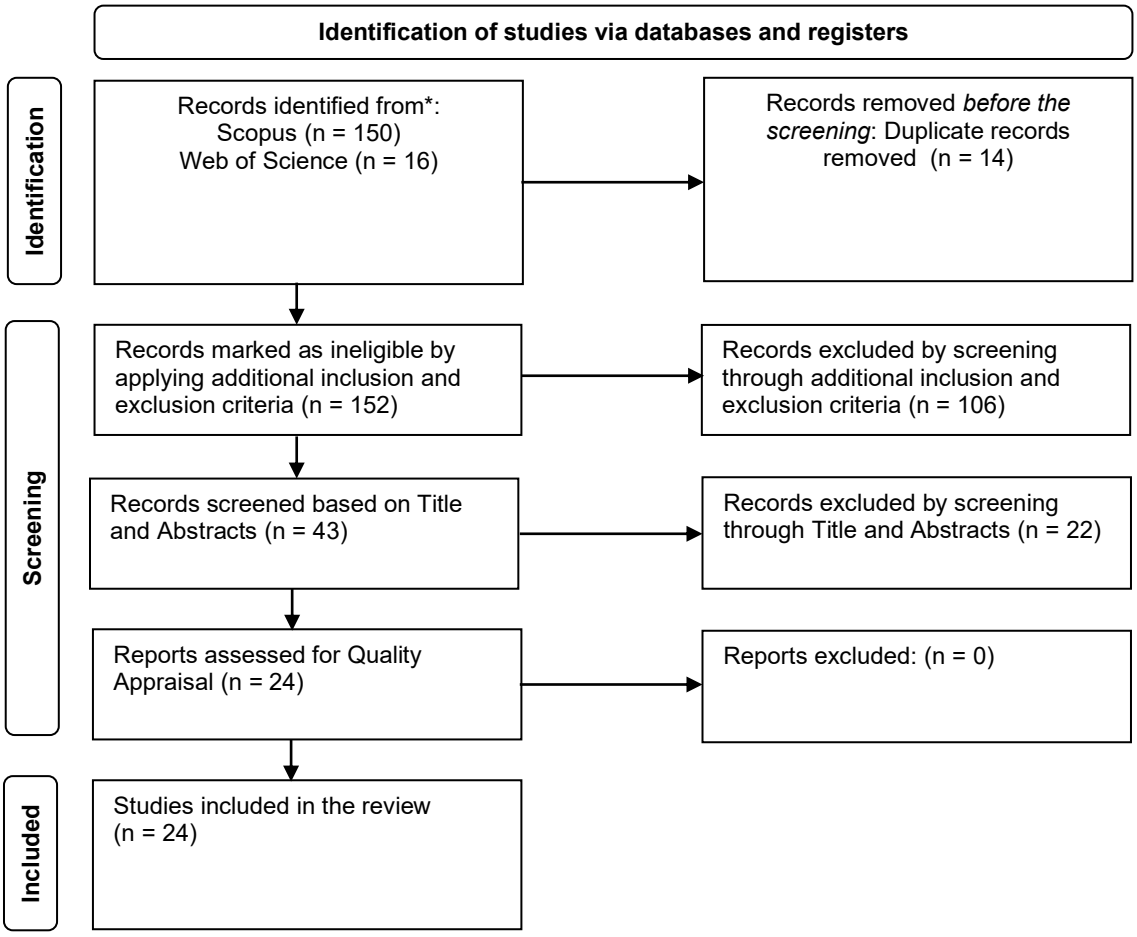

Figure 3. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses Framework

3.3. Inclusion and Exclusion Criteria

Following the keyword search in the database, it is important to set criteria for including and excluding documents to pinpoint more pertinent literature (Pratama & Wijayanti, 2023). The inclusion and exclusion criteria guidelines provided by the Joanna

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Briggs Institute aligned with the Population, Concept, Context (PCC) framework and established a systematic document selection approach with defined eligibility criteria and suitable scope to achieve the research goals. This tactic was applied during this phase (Pollock et al. 2023). The population element was excluded from this study because it did not concentrate on a specific group (Aromataris, 2020).

Table 1. Inclusion and Exclusion Criteria Based on the PCC Framework

Criteria	Inclusion	Exclusion
Population	-	-
Concept	A study on disaster-triggered financial instruments to improve the effectiveness of climate finance. A study on integrating climate finance and disaster-induced financial instruments to increase community resilience to climate change impacts. A study on the barriers to effective implementation of climate finance mechanisms. A study on the effectiveness of various financial instruments in reducing climate-related disaster risks.	Studies that do not discuss climate finance or financial instruments affected by disasters. Studies that only discuss climate finance or financial instruments in isolation without linking them to disaster risk management. Studies that focus solely on the technical aspects of climate change without addressing the financial implications or related financial instruments.
Context	Studies that include a global perspective or focus on developing countries vulnerable to climate change.	Studies that focus on specific sectors or industries without broader implications for climate finance or disaster risk management.

Table 2 contains additional criteria in addition to the inclusion and exclusion criteria shown in Table 1. This was used to clarify the eligibility criteria for selecting documents to be included in the study population.

Table 2. Additional Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Publication Period	Studies published in the last 10 years (2015-2024). The period was chosen to ensure that the studies with the selected research topic are still relevant and up-to-date.	Studies published before 2014.
Publication Types	Journal articles, reviews, and conference papers that are peer-reviewed.	Non-peer-reviewed publications such as technical reports, books, or news articles.
Language	Publication in English.	Publications in languages aside from English.
Journal Quality	Articles published in journals indexed in Scopus or Web of Science.	Articles that are not indexed by Scopus or Web of Science.
Access	Publications are available in open-access format.	Publications that cannot be accessed in full-text.
Publication Stage	Publications that have been fully published (final)	Publications that have not been published in full (articles in press)

3.4. Data Extraction and Quality Assessment

The datasets obtained from the Web of Science and Scopus databases were then combined using Microsoft Excel. At this stage, the process of deleting duplicate data was also performed. The synthesis of findings in this study focuses on the author, publication year, title, publication type, publication source, abstract, keywords, topic and field of study, study design, and results (Al-Lawati et al., 2022). To enable each reviewer to produce consistent and unbiased data extraction results, the second, third, and fourth authors separately performed the data extraction process (Bonfield et al., 2018). Furthermore, the results of the data extraction process conducted separately by each author will be discussed in a brainstorming session to resolve any disagreements arising during the data extraction process.

The study employed the Critical Appraisal Skills Program (CASP) to assess the quality of research that fulfilled the inclusion and exclusion criteria. The authors collaborated to review the initial quality assessment. The primary author performed a quality reassessment to finalize the overall quality evaluation conclusion. Nonetheless, this study did not exclude other studies due to the outcomes of this quality assessment, as this quality evaluation was carried out to compare studies concerning quality. This is done to synthesize findings by prioritizing the results of high-quality studies while considering relevant research results from lower-quality studies (Long et al., 2020).

4. Result and Discussion

4.1. Results of the Screening and Quality Assessment Process

Table 3 shows the documents that fulfilled the inclusion criteria during the screening process and were selected as samples for this study. All studies reviewed in this research were fully published and publicly accessible.

Table 3. List of Included Studies

Authors	Title	Year	Source Title	Publication Stage
Neumann, K., & Hirschnitz-Garbers, M.	Material efficiency and global pathways towards 100% renewable energy systems dynamics findings on potential and constraints	2022	Journal of Sustainable Development of Energy, Water and Environment Systems	Final
Tao, H., Zhuang, S., Xue, R., Cao, W., Tian, J., & Shan, Y.	Environmental finance: An interdisciplinary review	2022	Technological Forecasting and Social Change	Final
Qi, X., & Han, Y.	How carbon trading reduces China's pilot emissions: An exploration combining LMDI decomposition and synthetic control methods	2020	Polish Journal of Environmental Studies	Final
Hirschnitz-Garbers, M., Araujo Sosa, A., & Hinzmann, M.	Exploring perspectives on climate-resource-nexus policies: Barriers and relevance in different world regions	2022	Journal of Sustainable Development of Energy, Water and Environment Systems	Final
Shao, W., Dai, D., Zhao, Y., & Ye, L.	The effect of carbon trading pilot policy on resource allocation efficiency: A	2024	Sustainability (Switzerland)	Final

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Authors	Title	Year	Source Title	Publication Stage
	multiple mediating effect model of development innovation and investment			
Bostan, M.	EU electricity policymakers' (in) sensitivity to external factors: A multi-decade quantitative analysis	2021	International Journal of Energy Economics and Policy	Final
Richardson, A., & Xu, J.	Carbon trading with blockchain	2020	Springer Proceedings in Business and Economics	Final
Schüler, M., & Matuszczyk, J. V.	A multi-domain instrument for safety climate: Military safety climate questionnaire (MSCQ) and NOSACQ-50	2022	Safety Science	Final
Nielsen, K. S., Stern, P. C., Dietz, T., Gilligan, J. M., Van Vuuren, D. P., Figueroa, M. J., ... & Wood, R.	Improving climate change mitigation analysis: A framework for examining feasibility	2020	One Earth	Final
Plank, B., Eisenmenger, N., & Schaffartzik, A.	Do material efficiency improvements backfire?: Insights from an index decomposition analysis about the link between CO2 emissions and material use in Austria	2021	Journal of Industrial Ecology	Final
Bauer, F., Nielsen, T. D., Nilsson, L. J., Palm, E., Ericsson, K., Fråne, A., & Cullen, J.	Plastics and climate change breaking carbon lock-ins through three mitigation pathways	2022	One Earth	Final
Strojek-Filus, M., & Sulik-Górecka, A.	Assesment of the quality of reporting information on CO2 emission rights on the example of energy sector groups listed on the Warsaw Stock Exchange	2022	Management Systems in Production Engineering	Final
Chen, S.	Designing the Nationwide Emission Trading Scheme in China	2023	Green Finance	Final
Bauer, F., Hansen, T., & Nilsson, L. J.	Assessing the feasibility of archetypal transition pathways towards carbon neutrality–A comparative analysis of European industries	2022	Resources, Conservation, and Recycling	Final
López-Vallejo, M.	Zero-Net Emissions in Canada: Federal Policies and Provincial Diversity	2023	North America	Final
Garcia, N. E., & Ulibarri, N.	Plan writing as a policy tool: Instrumental, conceptual,	2022	Journal of Environmental	Final

Authors	Title	Year	Source Title	Publication Stage
	and tactical uses of water management plans in California		Studies and Sciences	
Turnheim, B., & Sovacool, B. K.	Exploring the role of failure in socio-technical transitions research	2020	Environmental Innovation and Societal Transitions	Final
Vogl, V., Åhman, M., & Nilsson, L. J.	The making of green steel in the EU: A policy evaluation for the early commercialization phase	2021	Climate Policy	Final
Arora-Jonsson, S., Westholm, L., Temu, B. J., & Petitt, A.	Carbon and cash in climate assemblages: The making of a new global citizenship	2016	Antipode	Final
Chunark, P., Thepkhun, P., Promjiraprawat, K., Winyuchakrit, P., & Limmeechokchai, B.	Low carbon transportation in Thailand: CO2 mitigation strategy in 2050	2015	SpringerPlus	Final
Ivković, I., Čokorilo, O., & Kaplanović, S.	The estimation of GHG emission costs in road and air transport sector: Case study of Serbia	2018	Transport	Final
Hertwich, E. G., Ali, S., Ciacci, L., Fishman, T., Heeren, N., Masanet, E., ... & Wolfram, P.	Material efficiency strategies to reducing greenhouse gas emissions associated with buildings, vehicles, and electronics-A review	2019	Environmental Research Letters	Final
Carrapatoso, A., & Geck, A.	Multiple wins, multiple organizations—How to manage institutional interaction in financing Forest Landscape Restoration (FLR)	2018	Sustainability	Final
Larsson, J., Kamb, A., Nässén, J., & Åkerman, J.	Measuring greenhouse gas emissions from international air travel of a country's residents methodological development and application for Sweden	2018	Environmental Impact Assessment Review	Final

This study sampled 24 papers and evaluated them for quality using a ten-question CASP checklist. Table 4 displays the outcomes of this evaluation.

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Table 4. Result of Quality Assessment

Source	CASP Questions									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
(Hertwich et al., 2019)	Y	Y	Y	Y	C	Y	N	C	Y	Y
(Larsson et al., 2018)	Y	C	Y	Y	C	Y	N	C	Y	Y
(Carrapatoso & Geck, 2018)	Y	Y	Y	Y	C	Y	N	C	Y	Y
(Ivković et al., 2018)	Y	N	Y	Y	C	Y	N	C	Y	Y
(Chunark et al., 2015)	Y	N	Y	Y	N	Y	N	C	Y	Y
(Arora-Jonsson et al., 2016)	Y	Y	Y	Y	Y	Y	C	C	Y	Y
(Vogl et al., 2021)	Y	Y	Y	Y	N	Y	N	N	Y	Y
(Turnheim & Sovacool, 2020)	Y	Y	Y	Y	C	Y	N	N	Y	Y
(Garcia & Ulibarri, 2022)	Y	Y	Y	Y	Y	Y	C	Y	Y	Y
(Neumann & Hirschnitz-Garbers, 2022)	Y	Y	Y	Y	N	Y	N	C	Y	Y
(Tao et al., 2022)	Y	Y	Y	Y	Y	Y	N	C	Y	Y
(Qi & Han, 2020)	Y	Y	Y	Y	C	Y	N	C	Y	Y
(Hirschnitz-Garbers et al., 2022)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
(Shao et al., 2024)	Y	N	Y	Y	N	Y	N	C	Y	Y
(Bostan, 2021)	Y	N	Y	Y	N	Y	N	C	Y	Y
(Schüler & Matuszczyk, 2022)	Y	Y	Y	Y	Y	Y	C	Y	Y	Y
(Nielsen et al., 2020)	Y	Y	Y	Y	N	N	N	Y	Y	Y
(Plank et al., 2021)	Y	N	Y	Y	C	Y	C	Y	Y	Y
(Bauer et al., 2022a)	Y	Y	Y	Y	N	Y	N	Y	Y	Y
(Strojek-Filus & Sulik-Górecka, 2022)	Y	Y	Y	Y	N	Y	N	Y	Y	Y
(Chen, 2023)	Y	N	Y	Y	N	Y	N	Y	Y	Y
(Bauer et al., 2022b)	Y	Y	Y	Y	N	C	N	N	Y	Y
(López-Vallejo, 2023)	Y	Y	Y	Y	N	Y	N	C	Y	Y
(Richardson & Xu, 2020)	Y	Y	Y	Y	N	C	N	C	N	Y

1. “Was there a clear statement of the aims of the research?”
2. “Is a qualitative methodology appropriate?”
3. “Was the research design appropriate to address the aims of the research?”
4. “Are the study's theoretical underpinnings clear, consistent and conceptually coherent?”
5. “Was the recruitment strategy appropriate to the aims of the research?”
6. “Was the data collected in a way that addressed the research issue?”
7. “Has the relationship between researcher and participants been adequately considered?”
8. “Have ethical issues been taken into consideration?”
9. “Was the data analysis sufficiently rigorous?”
10. “Is there a clear statement of findings?”

Description: N: “No", Y: “Yes", C: “Cannot tell".

The quality assessment results showed that all scientific publications sampled in the study were of good quality based on the quality classification recommendations on the CASP website. These recommendations state that if at least the first three questions are answered "Yes," the paper is of good quality and reliable. Next, data extraction was performed for the 24 studies included in the research sample. The extracted results were used to compile the data synthesis to answer the research questions.

4.2. RQ 1: The Integration of Climate Finance and Disaster-triggered Financial Instruments Enhance the Effectiveness of Disaster Risk Reduction and Increase Community Resilience to Climate Change Impacts

4.2.1. Conceptual Linkages between Climate Finance and Disaster-Triggered Financial Instruments

The relationship between climate finance and disaster-triggered financial instruments involves integrating financial strategies to manage the risks related to climate change and natural disasters, as shown in Figure 4. Climate finance is essential for reducing the economic impact of climate disasters and maintaining the stability of economic systems (Larsson et al., 2018). Several fields, such as risk management, the financial industry, and government policy, have demonstrated a link between climate finance and disaster-triggered instruments (Bauer et al., 2022a). This is a complex field of study, and it is important to study it in more depth. This aligns with the increasingly frequent natural disasters with high hazard levels in recent years, which have disrupted the economic system (Ivković et al., 2018).

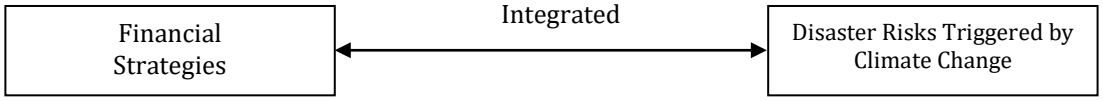

Figure 4. The relationship between climate finance and disaster-triggered financial instruments

Neumann and Hirschnitz-Garbers (2022) revealed that natural disasters caused by climate change significantly impact the financial sector by decreasing insurance companies' profitability, banking stability, and market returns. However, such events will increase the inflow of remittances through financial assistance to the affected areas (Chunark et al., 2015). The systemic risk to the banking and insurance sectors also increases owing to extreme weather events. Green financial instruments are used to minimize these risks (Curcio et al., 2023). In addition, disaster bonds and disaster insurance instruments play an important role in reducing financial losses by up to 25% under climate change risk scenarios (Phan & Schwartzman, 2024). Therefore, financial adaptation through these instruments is crucial for managing the high financial risks and accelerating the post-disaster recovery process.

However, while these financial instruments can significantly mitigate climate risks, their effectiveness depends on the government's implementation ofthe right models and mechanisms (Hertwich et al., 2019). Government actions and policies can significantly influence the response of financial markets to climate disasters (Gregory 2024). Government policies that compensate for the losses caused by climate disasters are also considered to reduce economic risk and instability in financial markets (Garcia & Ulibarri, 2022). In addition, the effective implementation of these instruments depends on a comprehensive risk assessment system, human resource capacity building, and adoption of long-term risk considerations into financial strategies (Vogl et al., 2021). There is also a need for further exploration to understand the economic impacts of implementing these instrumental mechanisms in different countries, especially developing countries and countries vulnerable to climate disasters (Cisse, 2021; Zhou et al., 2023).

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4.2.2. Enhancing Disaster Risk Reduction through Integrated Financial Mechanism

Climate change impacts not only the environment but also the survival of society and stability of the economic system. Several studies have been conducted to determine how financial instruments provide funding quickly and efficiently, and can facilitate rapid recovery after a disaster. Tao et al. (2022) mentioned that catastrophe bonds have been considered a beneficial financial tool through raising funds for disaster management and resilience projects to reduce the negative impact on society. The literature review shows that government agencies mainly issue bonds for resilience. It was also found that Asian and Pacific countries are more vulnerable to natural disasters, and thus require better risk management strategies, especially in financing disaster-related costs.

Nielsen et al. (2020) revealed that natural disasters can increase the cost of financing government debt in middle- and low-income countries due to lower credit market levels, private insurance penetration, and central bank independence. It was also found that the disaster risk increased significantly in the insurance sector. This is influenced by the increasing risk of loss and the frequency of natural disasters, particularly climate change-related disasters (Turnheim & Sovacool, 2020). Therefore, the government must encourage private investors to participate in climate finance, including investments in financial instruments triggered by these disasters (López-Vallejo 2023). Institutional investors can also play an important role in providing a stronger financial response to disasters through pension funds and insurance (Tao et al., 2022).

Climate finance plays an important role in mitigating the impacts of climate-related disasters by providing the funds necessary for mitigation and adaptation efforts (Bauer et al., 2022b). According to Tao et al. (2022), disaster-triggered financial instruments include disaster bonds, parametric insurance, catastrophe bonds, and CCF. Integrating these instruments to mitigate the impact of disaster-triggered financial instruments can increase the effectiveness of climate finance by providing rapid financing for post-disaster economic system stability (Schüler & Matuszczyk, 2022).

4.2.3. Strengthening Community Resilience through Climate Finance-Disaster Finance Synergies

An approach that integrates climate finance with disaster trigger-based financial instruments can significantly increase community resilience to climate change impacts. This strategy aims to optimize financial resources to support mitigation and adaptation initiatives and reduce vulnerability to climate change-related disaster risks (Plank et al., 2021). Implementing climate finance through disaster-induced financial instruments refers to financial resources, including funding from public, private, and alternative financial resources (Tao et al., 2022). Mitigation efforts that focus on allocating these financial resources are generally aimed at building infrastructure and implementing projects that can minimize climate vulnerability (Strojek-Filus & Sulik-Górecka, 2022). Other efforts have also been made by implementing carbon trading mechanisms to manage the risks incurred by buying and selling financial assets by considering environmental sustainability (Shao et al., 2020; Shao et al., 2024).

According to Arora-Jonsson et al. (2016), mitigation efforts through the Reducing Emissions from Deforestation and Forest Degradation (REDD) program will encourage sustainable forest management and provide financial incentives to communities involved in conservation efforts. The programme aims to generate income through carbon credits that can be reinvested in community resilience projects. Integrating climate finance with community needs can support infrastructure development,

capacity-building community resilience, and sustainable practices that reduce community vulnerability to climate change (Carrapatoso & Geck, 2018).

In addition to the importance of integration between disaster-triggered financial instruments, there is also a need for active and effective institutional collaboration among the government, private sector, and communities (Richardson & Xu, 2020). This is critical to achieving harmonized standards that improve the efficiency of financial flows and ensure that allocated resources reach communities (Carrapatoso & Geck, 2018). Communities have a greater capacity to prepare for and adapt to the challenges posed by climate change. A concept map illustrating how integrating climate finance and disaster-triggered financial instruments can enhance community resilience to climate change impacts is shown in Figure 5.

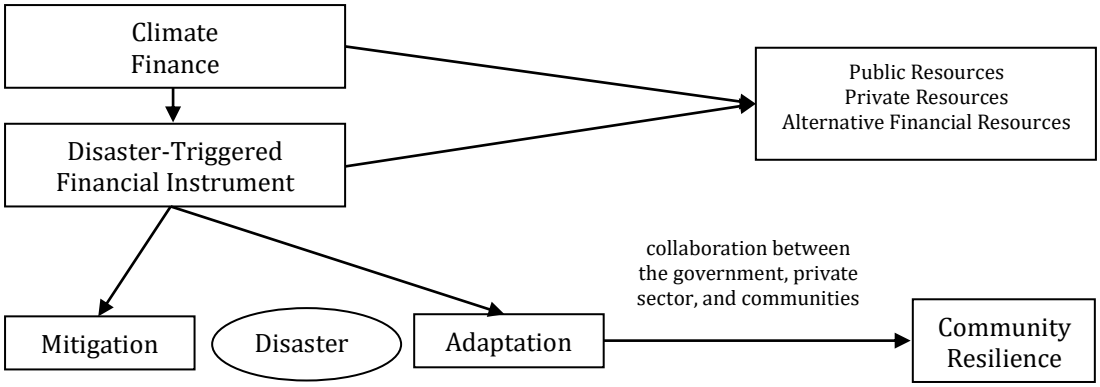

Figure 5. Concept map for achieving community resilience to the impacts of climate change through the integration of climate finance and disaster-triggered financial instruments

4.3. RQ 2: Barriers to The Implementation of Climate Finance Mechanisms and The Role of Disaster-Triggered Financial Instruments in Overcoming them

Climate finance mechanisms are crucial for supporting climate-change mitigation and adaptation initiatives. However, their implementation is challenging. Lower-middle-income developing countries will require approximately USD 90 trillion by 2025 to build new green infrastructure. In fact, according to The World Bank, the Gross National Income (GNI) per capita over the fiscal year 2025 for countries in this category is only US$ 4,515. Although the Copenhagen Conference promised US$100 billion in aid annually, this funding is still considered a deficit (Tao et al., 2022). In addition, each country's different capabilities and resources in implementing a framework for responding to climate change are new obstacles, given that the scale of the funding deficit in each country will inevitably vary. To address this issue, governments are encouraging private investors to participate in climate investment. However, the lack of legitimacy makes this strategy suboptimal (Bostan 2021).

Disaster-induced financial instruments play a role in offering potential solutions to overcome these barriers. Disaster-induced financial instruments provide a rapid financial response in the aftermath of a disaster, and can help manage emerging financial risks (Hirschnitz-Garbers et al., 2022). Additionally, disaster-triggered financial instruments can enhance financial system stability by providing mechanisms for rapid financial assistance, which is important for creating societal resilience and encouraging further investment in climate finance (Chen, 2023). They also offer financial protection against climate risks, thereby reducing funding gaps (Nielsen et al., 2020).

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5. Conclusion

Climate change uncertainty has increased the intensity and frequency of natural disasters and disrupted the global economic system. Disaster-triggered financial instruments have proven to be effective in providing rapid financial support for disaster impact mitigation. The findings of this study indicate that significant structural gaps remain, including fragmented governance, a lack of integration with climate resilience strategies, and disparities in adaptive capacity in developing countries. Optimal integration between climate finance and disaster-triggered financial instruments can enhance community resilience to climate change through accelerated financial innovation, strengthened adaptive infrastructure, and alignment with global policy. Visionary policymakers should explicitly design and enforce robust, transparent, and accountable governance frameworks to ensure effective and equitable distribution of financial instruments, particularly in developing countries that often face funding gaps and technical capacity constraints. To strengthen the contribution of these financial instruments to climate resilience, future research should focus on several key priorities: developing contextual and responsive local financial models that are responsive to socioeconomic dynamics; evaluating the potential for expanding blended finance mechanisms such as public-private partnerships to bridge financing gaps; and analyzing the indirect impacts of these instruments, including the potential risk of debt accumulation on long-term resilience. On the other hand, policymakers are encouraged to institutionalize a standardized risk assessment framework. By addressing existing gaps, climate financing has the potential to evolve from a reactive risk-mitigation mechanism into a proactive and transformative approach that supports inclusive adaptation.

References

Al-Lawati, E. H., Abdul Kohar, U. H., & Shahrin Suleiman, E. (2022). Entrepreneurial culture in educational institutions: A scoping review. *Cogent Business and Management*, *9*(1), 1–59. https://doi.org/10.1080/23311975.2021.1997237

Aromataris, E. (2020). Furthering the science of evidence synthesis with a mix of methods. *JBI Evidence Synthesis, 18*(10), 2106-2107. https://doi.org/10.11124/JBIES-20-00369

Arora-Jonsson, S., Westholm, L., Temu, B. J., & Petitt, A. (2016). Carbon and cash in climate assemblages: Making new global citizenship. *Antipode*, *48*(1), 74–96. https://doi.org/10.1111/anti.12170

Bauer, F., Hansen, T., & Nilsson, L. J. (2022a). Assessing the feasibility of archetypal transition pathways towards carbon neutrality–A comparative analysis of European industries. *Resources, Conservation and Recycling*, *177*(1), 1–10. https://doi.org/10.1016/j.resconrec.2021.106015

Bauer, F., Nielsen, T. D., Nilsson, L. J., Palm, E., Ericsson, K., Fråne, A., & Cullen, J. (2022b). Plastics and climate change breaking carbon lock-ins through three mitigation pathways. *One Earth*, *5*(4), 361–376. https://doi.org/10.1016/j.oneear.2022.03.007

Bayer, J., & Stigler, S. (2015). Financial instruments for disaster risk management and climate change adaptation. *Climatic Change*, *133*(1), 85–100. https://doi.org/10.1007/s10584-013-1035-6

Bhandary, R. R., Gallagher, K. S., & Zhang, F. (2021). Climate finance policy in practice: A review of the evidence. *Climate Policy*, *21*(4), 529–545. https://doi.org/10.1080/14693062.2020.1871313

Bonfield, M., Fearnside, L., & Cramp, F. (2018). A personal experience of performing a systematic literature review. *Methodologist's Corner*, *47*(3), 167–171.

Bostan, M. (2021). EU electricity policymakers' (In) sensitivity to external factors: A multi-decade quantitative analysis. *International Journal of Energy Economics and Policy*, *11*(6), 303–314. https://doi.org/10.32479/ijeep.11630

Bourcet, C. (2020). Empirical determinants of renewable energy deployment: A systematic literature review. *Energy Economics*, *85*, 104563. https://doi.org/10.1016/j.eneco.2019.104563

Bracking, S. (2019). Financialization, climate finance, and the calculative challenges of managing environmental change. *Antipode*, *51*(3), 709–729. https://doi.org/10.1111/anti.12510

Carrapatoso, A., & Geck, A. (2018). Multiple wins, multiple organizations- How to manage institutional interaction in financing Forest Landscape Restoration (FLR). *Sustainability (Switzerland)*, *10*(3), 1–19. https://doi.org/10.3390/su10030757

Chen, S. (2023). Designing the nationwide emission trading scheme in China. *Green Finance*, *5*(3), 431–451. https://doi.org/10.3934/GF.2023017

Chirisa, I., Gumbo, T., Gundu-Jakarasi, V. N., Zhakata, W., Karakadzai, T., Dipura, R., & Moyo, T. (2021). Interrogating climate adaptation financing in Zimbabwe: Proposed direction. *Sustainability (Switzerland)*, *13*(12), 1–20. https://doi.org/10.3390/su13126517

Chunark, P., Thepkhun, P., Promjiraprawat, K., Winyuchakrit, P., & Limmeechokchai, B. (2015). Low carbon transportation in Thailand: CO2 mitigation strategy in 2050. *SpringerPlus*, *4*(1), 1–31. https://doi.org/10.1186/s40064-015-1388-6

Cisse, J. D. (2021). *Climate and Disaster Risk Financing Instruments: An Overview*. United Nations University.

Collich, G., Rosillo, R., Martínez, J., Wald, D. J., & Durante, J. J. (2020). Financial risk innovation: Development of earthquake parametric triggers for contingent credit instruments. *Natural Disasters and Climate Change: Innovative Solutions in Financial Risk Management*, 1-13. https://doi.org/10.1007/978-3-030-43708-4_1

Coronese, M., Lamperti, F., Keller, K., Chiaromonte, F., & Roventini, A. (2019). Evidence for a sharp increase in the economic damages of extreme natural disasters. *Proceedings of the National Academy of Sciences*, *116*(43), 21450–21455. https://doi.org/10.1073/pnas.1907826116

Cummins, J. D., & Mahul, O. (2009). *Catastrophe risk financing in developing countries: Principles for public intervention*. World Bank Publications.

Curcio, D., Gianfrancesco, I., & Vioto, D. (2023). Climate change and financial systemic risk: Evidence from US banks and insurers. *Journal of Financial Stability*, *66*(1), 1–13. https://doi.org/10.1016/j.jfs.2023.101132

Delmon, J. (2024). *Innovative funding and financing for infrastructure: Addressing scarcity of public resources.* Cambridge University Press. https://doi.org/10.1017/9781009340182.009

Dent, C. M. (2022). Neoliberal Environmentalism, Climate Interventionism, and the Trade-Climate Nexus. *Sustainability (Switzerland)*, *14*(23). https://doi.org/10.3390/su142315804

Dubash, N. K. (2019). *India in a warming world: Integrating climate change and development*. Oxford University Press.

Garcia, N. E, & Ulibarri, N. (2022). Plan writing as a policy tool: Instrumental, conceptual, and tactical uses of water management plans in California. *Journal of Environmental Studies and Sciences*, *12*(3), 475–489. https://doi.org/10.1007/s13412-022-00754-0

Gregory, R. P. (2024). The role of political uncertainty in climate-related disaster impacts on financial markets. *Journal of Risk and Financial Management*, *17*(7), 273–299. https://doi.org/10.3390/jrfm17070273

Grove, K. (2021). Insurantialization and the moral economy of ex-ante risk management in the Caribbean. *Economy and Society*, *50*(2), 224–247. https://doi.org/10.1080/03085147.2020.1853363

Hallegatte, S. (2016). *Shock waves: Managing the impacts of climate change on poverty.* World Bank Publications.

Hertwich, E. G., Ali, S., Ciacci, L., Fishman, T., Heeren, N., Masanet, E., ... & Wolfram, P. (2019). Material efficiency strategies to reducing greenhouse gas emissions associated with buildings, vehicles, and electronics—A review. *Environmental Research Letters, 14*(4), 043004. https://doi.org/10.1088/1748-9326/ab0fe3

Hirschnitz-Garbers, M., Sosa, A. A., & Hinzmann, M. (2022). Exploring perspectives on climate-resource-nexus policies: Barriers and relevance in different world regions. *Journal of Sustainable Development of Energy, Water and Environment Systems*, *10*(3), 1–28. https://doi.org/10.13044/j.sdewes.d9.0408

Ivković, I., Čokorilo, O., & Kaplanović, S. (2018). The estimation of GHG emission costs in the road and air transport sector: A case study of Serbia. *Transport*, *33*(1), 260–267. https://doi.org/10.3846/16484142.2016.1169557

Khan, M. R., & Munira, S. (2021). Climate change adaptation as a global public good: Implications for financing. *Climatic Change*, *167*(3), 50. https://doi.org/10.1007/s10584-021-03195-w

Kousky, C. (2014). Informing climate adaptation: A review of the economic costs of natural disasters. *Energy Economics*, *46*(1), 576–592. https://doi.org/10.1016/j.eneco.2013.09.029

Larsson, J., Kamb, A., Nässén, J., & Åkerman, J. (2018). Measuring greenhouse gas emissions from international air travel of a country's residents methodological development and application for Sweden. *Environmental Impact Assessment Review*, *72*(1), 137–144. https://doi.org/10.1016/j.eiar.2018.05.013

Levy, D. L., & Herst, R. (2018). Financing climate resilience: Mobilizing resources and incentives to protect Boston from climate risks. *Sustainable Solutions Lab*, *12*.

Long, H. A., French, D. P., & Brooks, J. M. (2020). Optimizing the value of the critical appraisal skills program (CASP) tool for quality appraisal in qualitative evidence synthesis. *Research Methods in Medicine & Health Sciences*, *1*(1), 31–42. https://doi.org/10.1177/2632084320947559

López-Vallejo, M. (2023). Zero-net emissions in Canada: Federal policies and provincial diversity. *Norteamerica*, *18*(1), 377–404. https://doi.org/10.22201/CISAN.24487228E.2023.1.623

Mahood, Q., Van Eerd, D., & Irvin, E. (2014). Searching for grey literature for systematic reviews: Challenges and benefits. *Research Synthesis Methods*, *5*(3), 221–234. https://doi.org/10.1002/jrsm.1106

Michaelowa, A., & Scherer, A. K. (2022). *Handbook of International Climate Finance*. Edward Elgar Publishing. https://doi.org/10.4337/9781784715656

Mohamadi, F. (2021). I*ntroduction to project finance in renewable energy infrastructure: Including public-private investments and non-mature markets*. Springer Nature.

Naser, M. M., & Pearce, P. (2022). Evolution of the International Climate Change Policy and Processes: UNFCCC to Paris Agreement. In *Oxford Research Encyclopedia of Environmental Science*. https://doi.org/10.1093/acrefore/9780199389414.013.422

Neumann, K., & Hirschnitz-Garbers, M. (2022). Material efficiency and global pathways towards 100% renewable energy systems–system dynamics findings on potential and constraints. *Journal of Sustainable Development of Energy, Water and Environment Systems*, *10*(4), 1100427. https://doi.org/10.13044/j.sdewes.d10.0427

Nielsen, K. S., Stern, P. C., Dietz, T., Gilligan, J. M., van Vuuren, D. P., Figueroa, M. J., Folke, C., Gwozdz, W., Ivanova, D., Reisch, L. A., Vandenbergh, M. P., Wolske, K. S., & Wood, R. (2020). Improving climate change mitigation analysis: A framework for examining feasibility. *One Earth*, *3*(3), 325–336. https://doi.org/10.1016/j.oneear.2020.08.007

Phan, T., & Schwartzman, F. (2024). Climate defaults and financial adaptation. *European Economic Review, 170*, 104866. https://doi.org/10.1016/j.euroecorev.2024.104866

Pittel, K., & Rübbelke, D. (2013). International climate finance and its influence on fairness and policy. *World Economy*, *36*(4), 419–436. https://doi.org/10.1111/twec.12029

Plank, B., Eisenmenger, N., & Schaffartzik, A. (2021). Do material efficiency improvements backfire? Insights from an index decomposition analysis about the link between CO2 emissions and material use for Austria. *Journal of Industrial Ecology*, *25*(2), 511–522. https://doi.org/10.1111/jiec.13076

Pollner, J. (2012). *Financial and fiscal instruments for catastrophe risk management: Addressing the losses from Flood Hazards in Central Europe*. World Bank Publications.

Pollock, D., Peters, M. D. J., Khalil, H., McInerney, P., Alexander, L., Tricco, A. C., Evans, C., de Moraes, É. B., Godfrey, C. M., Pieper, D., Saran, A., Stern, C., & Munn, Z. (2023). Recommendations for extracting, analyzing, and presenting results in scoping reviews. *JBI Evidence Synthesis*, *21*(3), 520–532. https://doi.org/10.11124/JBIES-22-00123

Pratama, B. B., & Wijayanti, D. (2023). Perancangan model ekonomi kreatif 5.0 berbasis digital social innovation. *Jurnal Fokus Manajemen Bisnis*, *13*(1), 76–90. https://doi.org/10.12928/fokus.v13i1.7811

Purkayastha, D., & Sarkar, R. (2021). Getting financial markets to work for climate finance. *The Journal of Structured Finance Summer*, *27*(2), 27–41. https://doi.org/10.3905/jsf.2021.1.122

Qi, X., & Han, Y. (2020). How carbon trading reduces China's pilot emissions: An exploration combining LMDI decomposition and synthetic control methods. *Polish Journal of Environmental Studies*, *29*(5), 3273–3284. https://doi.org/10.15244/pjoes/115212

Richardson, A., & Xu, J. (2020). Carbon trading with blockchain. In *Mathematical Research for Blockchain Economy: 2nd International Conference MARBLE 2020, Vilamoura, Portugal* (pp. 105-124). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-53356-4_7

Rini, P. L. (2020). Faktor kunci keberhasilan manajemen rantai pasokan penanganan bencana alam dalam perspektif pemerintah. *Jurnal Fokus Manajemen Bisnis*, *10*(1), 62–72. https://doi.org/10.12928/fokus.v10i1.1675

Ritchie, H., & Rosado, P. (2024). Is the number of natural disasters increasing? *Our World in Data*.

Sauer, P. C., & Seuring, S. (2023). Conducting systematic literature reviews in management research: A guide in 6 steps and 14 decisions. *Review of Managerial Science*, *17*(5), 1899–1933. https://doi.org/10.1007/s11846-023-00668-3

Schüler, M., & Matuszczyk, J. V. (2022). A multi-domain instrument for safety climate: Military safety climate questionnaire (MSCQ) and NOSACQ-50. *Safety Science*, *154*(1), 105851. https://doi.org/10.1016/j.ssci.2022.105851

Shao, S., Hu, Z., Cao, J., Yang, L., & Guan, D. (2020). Environmental regulation and enterprise innovation: a review. *Business strategy and the environment*, *29*(3), 1465-1478. https://doi.org/10.1002/bse.2446

Shao, W., Dai, D., Zhao, Y., & Ye, L. (2024). The effect of carbon trading pilot policy on resource allocation efficiency: A multiple mediating effect model of development, innovation, and investment. *Sustainability*, *16*(17), 7394. https://doi.org/10.3390/su16177394

Shi, P., Ye, T., Wang, Y., Zhou, T., Xu, W., Du, J., Wang, J., Li, N., Huang, C., & Liu, L. (2020). Disaster risk science: A geographical perspective and a research framework. *International Journal of Disaster Risk Science*, *11*, 426–440. https://doi.org/10.1007/s13753-020-00296-5

Song, J., Zhang, H., & Dong, W. (2016). A review of emerging trends in global PPP research: Analysis and visualization. *Scientometrics*, *107*(3), 1111–1147. https://doi.org/10.1007/s11192-016-1918-1

Steckel, J. C., Jakob, M., Flachsland, C., Kornek, U., Lessmann, K., & Edenhofer, O. (2017). From climate finance to sustainable development finance. *Wiley Interdisciplinary Reviews: Climate Change*, *8*(1), e437. https://doi.org/10.1002/wcc.437

Strausz, R. (2017). A theory of crowdfunding: A mechanism design approach with demand uncertainty and moral hazard. *American Economic Review*, *107*(6), 1430–1476. https://doi.org/10.1257/aer.20151700

Strojek-Filus, M., & Sulik-Górecka, A. (2022). Assess the quality of reporting information on CO2 emission rights, using the example of energy sector groups listed on the Warsaw Stock Exchange. *Management Systems in Production Engineering*, *30*(2), 116–129. https://doi.org/10.2478/mspe-2022-0015

Tao, H., Zhuang, S., Xue, R., Cao, W., Tian, J., & Shan, Y. (2022). Environmental finance: An interdisciplinary review. *Technological Forecasting and Social Change*, *179*, 121639. https://doi.org/10.1016/j.techfore.2022.121639

Tong, X., & Zhang, H. (2020). Improving environmental risk management through better disaster prevention and mitigation policies. *China's Emergency Management: Theory, Practice and Policy*, 259–282. https://doi.org/10.1007/978-981-13-9140-8_9

Turnheim, B., & Sovacool, B. K. (2020). Exploring the role of failure in socio-technical transitions research. *Environmental Innovation and Societal Transitions*, *37*, 267–289. https://doi.org/10.1016/j.eist.2020.09.005

Vogl, V., Åhman, M., & Nilsson, L. J. (2021). The making of green steel in the EU: A policy evaluation for the early commercialization phase. *Climate Policy*, *21*(1), 78–92. https://doi.org/10.1080/14693062.2020.1803040

Warren, P. (2019). The role of climate finance beyond renewables: Demand-side management and carbon capture, usage and storage. *Climate Policy*, *19*(7), 861–877. https://doi.org/10.1080/14693062.2019.1605330

Zhao, Y., Lee, J. P., & Yu, M. T. (2021). Catastrophe risk, reinsurance, and securitized risk-transfer solutions: A review. *China Finance Review International*, *11*(4), 449–473. https://doi.org/10.1108/CFRI-06-2021-0120

Zhou, F., Endendijk, T., & Wouter Botzen, W. J. (2023). A review of the financial sector impacts of risks associated with climate change. *Annual Review of Resource Economics*, *44*(1), 233–256. https://doi.org/10.1146/annurev-resource-101822