

Climate Change Mitigation and Adaptation Financing Strategies in Emerging Economies: A Systematic Literature Review

Abstract

Interest in climate change is growing among scholars, as are the management strategies being implemented across countries. The management strategies by emerging economies continue to feature less in the literature, and also their contribution to the global carbon emissions reduction agenda remains minimal. We employ a systematic review methodology to examine the prevalent climate change mitigation and adaptation strategies in emerging economies as well as the underlying financing mechanisms. Our preliminary findings show an increasing focus on the subject on regional blocs that host some of the world's largest emerging economies. We also reveal the lack of focus on the UN Sustainable Development Goals (SDGs) and the link with climate change management strategies.

Keywords: climate change, mitigation, adaptation, climate financing strategies, emerging economies

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1.0 Introduction

Climate change remains topical in recent global sustainability and development efforts. This is attributable to the variable nature of the various mitigation and adaptation solutions being implemented, and according to Peng et al. (2023), the vulnerability of natural ecosystems to accommodate these management measures. Studies have drawn the link between climate mitigation and adaptation, and the impact of disaster risk management on resilient and sustainable pathways, for example Shaw et al. (2014). Different economies continue to implement a myriad of strategies to manage the adverse consequence of climate change in their territories. In China for example, Huang et al. (2022) reported a mix of urban-related projects and plans including transportation and land use, flood prevention systems, and food hazard alleviation as some of the strategies for climate management in urban cities.

The variability in the climate change management strategies globally implies that the advanced economies which attract increasing levels of financial and other resources will dominate the climate change management ecosystem. However, the implications for non-action towards effective climate management strategies are boundaryless. These require a concerted effort in both developed and developing economies to achieve climate change mitigation and adaptation objectives. A grand challenge for most countries amidst these management strategies is the underlying sustainable financing mechanism. This consideration is critical as a result of the huge financial requirement for climate change management (Cui and Huang, 2018). The economic advantages to developed economies and the financial constraints to their emerging counterparts create a gap and signal challenges to the achievement of climate change management goals in emerging economies.

Therefore, we employ a systematic literature review to analyse and synthesise the climate change mitigation strategies in emerging economies and explore the financing means underlying the management strategies. Climate change management strategies are also directly related to some of the SDGs. The SDGs of interest to this review are SDGs 7, 11, 12, and 13. We explore the extent of coverage of the related SDGs in the literature.

The remainder of the paper is structured as follows. Section two deals with the study methodology, and summary description of the data. We describe our preliminary findings in section three and provide the planned next steps as well as some limitations to the study in the fourth section.

2.0 Methodology

This section describes the articles search strategy, sample selection criteria and provides summary insights into the data.

2.1 Search strategy

Articles published in English Language and used for this review were sourced from the Web of Science, and Scopus databases. These are frequently searched sources of articles among business and management researchers (Orsini and Marrone, 2019; Venkataramanan et al., 2019; Aversa, 2023). The search commenced with pre-selected keywords constructed by scanning the abstract and introduction sections of prior articles. By analysing how these addressed the subject in the title of the articles, we identified and selected the key areas of interest among researches which then informed the focus of this review.

2.2 Sample selection

A total of 3,765 results were returned from both databases after a Boolean search formulation thus: “climate change” AND “financing strategies”, “climate change” AND “mitigation and adaptation” AND strategies AND “emerging economies”, “climate change” AND “mitigation and adaptation” AND strategies, climate change financing strategies AND mitigation, and climate change AND emerging economies. The search was conducted between February 1 and 3, 2024 beginning with the Web of Science database on the first day, then Scopus on the next two days. The results were limited to refereed journals by all subjects in all years of publication. This yielded 2,116 articles. Using the 2021 AJG guide (formerly ABS) for all rankings from 1 to 4* as a benchmark for sample selection, we obtained 149 articles as the final sample, after removing 17 duplicates. The objective for including all journal rankings and all subject disciplines was to widen the scope and chances of selecting articles from across multiple disciplines. For this paper however, 30 articles have been reviewed, selected in order of the sequence in which the final sample was saved, beginning from 1 to 149. The completed study will incorporate the full sample in the analyses. Table 2.0 below summarises the search results and sample selection process.

Table 2.0 Search and sample result

Database	Retrieved results	Limited to refereed journals	Filtered to 2021 AJG (all rankings)	Duplicates	Final sample
Web of Science	1,176	519	11	–	–
Scopus	2,589	1,597	138	–	–
Total	3,765	2,116	149	17	149
Sample for this paper					30

2.3 Data summary

After identifying areas of study interest among researchers as described in the third paragraph of Section 1.0, we selected our focus areas. These include the coverage of prior studies on mitigation and adaptation (or both) as climate change management strategies. We then considered the extent of coverage of specific projects aimed at climate change mitigation and adaptation, as well the regional economic context of those projects. This is due to how susceptible developing and emerging economies are to the adverse effects of climate change relative to their developed counterparts. We noted the constraining nature of funds mobilisation to achieving global climate management targets. For example, of the pledged commitment to raise US\$20 billion by 2020 to assist developing countries, only US\$10.3 billion had been realised from 43 governments as at 2018 (Cui and Huang, 2018). We therefore considered the financing mechanisms or strategies proposed or described in prior literature. Furthermore, we examined the reference to the SDGs in relation to the findings and proposed project or strategy in prior literature. This is due to the strong connection between climate change management strategies and some of the SDGs.

We then reviewed the journals that document these strategies to consider the scholarship receiving attention in highly-ranked journals. Interest in the subject was also reviewed for growth over time. Overall, we observe a higher concentration of articles in the Journal of

Cleaner Production, with Technological Forecasting and Social Change, Journal of Sustainable Tourism, Journal of Environmental Management, and Global Environmental Management following in terms of journal impact factor and number of publications. Figure 2.0 summarises the publication of articles in high-ranking journals.

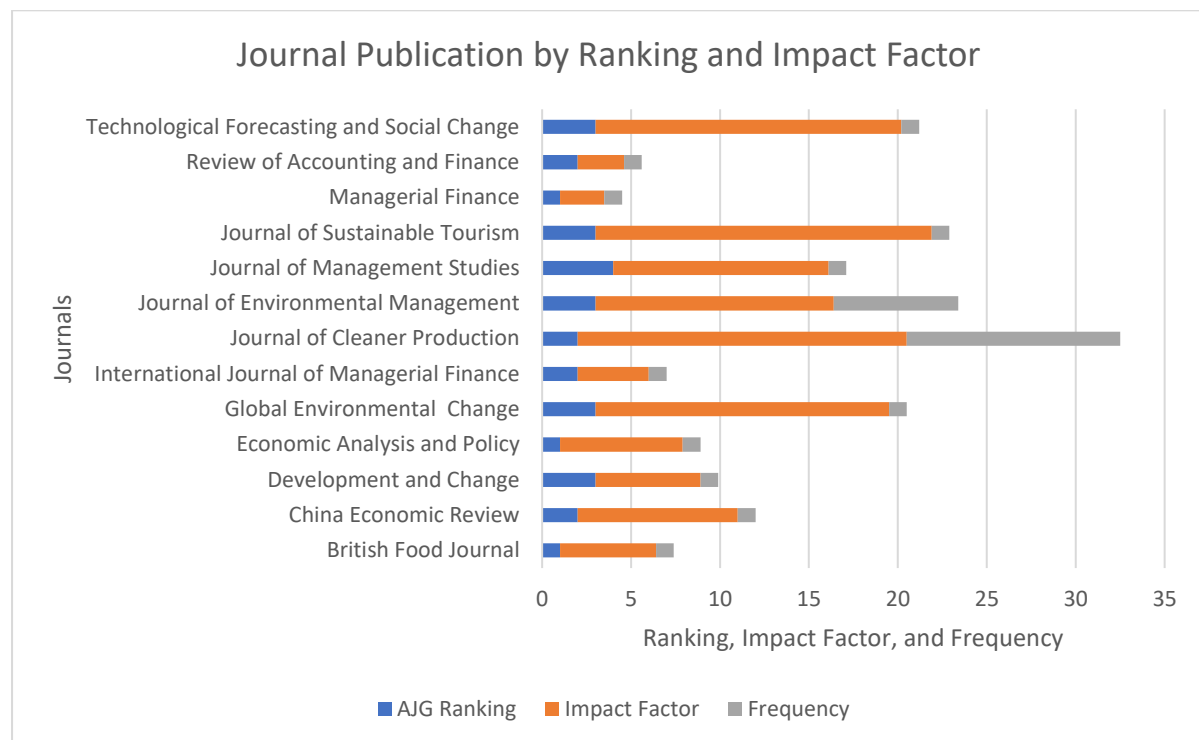


Fig. 2.0 Article publication by journal ranking and impact factor

The data also revealed an unsteady growth in the volumes of publication on the subject since 2010. Publications turnout were unchanged between 2012 and 2018, and between 2021 and 2022. There were significant increases in publications in 2020 and 2023, and a decline in 2024. We defer our comment on the drivers of the sharp increases in the reported years to the completed review. However, with increasing awareness of climate change among many governments and corporations (Flammer, 2013; Pee and Pan, 2021), we expect record growth in publications on the subject. The decline in 2021 could however be attributed to the global shock from the Covid-19 pandemic which adversely impacted academia especially the social sciences, while that of 2024 may be attributed to the period of the articles search (February 1 – 3, 2024) which was quite early in the year. The sharp increases in 2023 is expected to continue in the foreseeable future. Figure 2.1 below shows the trend of articles publication since 2010.



Fig. 2.1 Growth in articles publication

Regarding the data sources and data type, we observed a concentration on secondary data ($n=19$), for example in (Lee, Chowdhury and Shubita, 2023; Tan-Soo, Li and Qin, 2023; Makpotche, Bouslah and M'Zali, 2024), while one record of primary data was noted in Okoh and Onuoha (2024). Journal articles were the next most used data types ($n=16$). These were mostly used in systematic literature reviews, including the incorporation of official publication of multilateral organisations, for example in Aversa (2023); McAfee (2012); and Venkataramanan et al. (2019). Journal articles also featured in Partey et al. (2018) who integrated reports from field trialling of participants in their research. Other data sources were CDP database in Safiullah et al. (2023), Datastream database in Lee et al. (2023), GIM-index in Makpotche et al. (2024), interviews in Okoh and Onuoha (2024), IPCC 6th Assessment Report in Scott et al. (2023), Panel data estimates on N-11 countries in Li et al. (2023), and PubMed in Venkataramanan et al. (2019). Two studies obtained data by building their own model, in H. Cui et al. (2020), and generating field data, in Partey et al. (2018). Table 2.1 summarises the data sources and data type in our sample literature.

Table 2.1 Publications by data sources and data type

No	Author	Data Source	Data Type
1.	Venkataramanan et al. (2019)	PubMed	Journal Articles
2.	H. Cui et al. (2020)	Model-specified data construction	Model-specified data
3.	McAfee (2012)	Journal articles	Journal Articles, Other publications
4.	Partey et al. (2018)	Study-generated field data	Field trialling data
5.	Aversa (2023)	Journal articles	Secondary
6.	Marti et al. (2023)	Journal articles	Secondary
7.	Woodruff et al. (2020)	Journal articles	Secondary
8.	Sharifi (2019)	Journal articles	Secondary
9.	Tan-Soo et al. (2023)	Journal articles	Secondary
10.	Peng et al. (2023)	Journal articles	Secondary
11.	Wimbadi and Djalante (2020)	Journal articles	Secondary
12.	Scott et al. (2023)	IPCC 6th Assessment Report	Secondary
13.	Azimi Fereidani et al. (2021)	Journal articles	Secondary

14.	Alarcón et al. (2023)	Journal articles	Secondary
15.	Orsini and Marrone (2019)	Journal articles	Secondary
16.	Quilliam et al. (2015)	Journal articles	Secondary
17.	Gan et al. (2020)	Journal articles	Secondary
18.	Espeland et al. (2020)	Journal articles	Secondary
19.	Mcleod et al. (2019)	Journal articles	Secondary
20.	Makpotche et al. (2024)	GIM-index	Secondary
21.	Safiullah et al. (2023)	CDP database	Secondary
22.	Okoh and Onuoha (2024)	Interviews	Primary
23.	Xu et al. (2023)	Journal articles	Secondary
24.	Li et al. (2023)	Panel data estimates on N-11 countries	Secondary
25.	Lee et al. (2023)	DataStream database	Secondary

Our review also reveals varying methodological approaches, with literature review being the most used methodology (48%). We again observed a high preference for the systematic literature review methodology, representing 13% of the sample. Literature review methodologies explore emerging themes, concepts, and contemporary developments around a subject while systematic literature reviews produce answers to a clinical question on the subject. While we observed high incidence of literature review methodologies (61%) of the sample, our focus on the main climate change management strategies in emerging economies, their underlying financing instrument, and the reference of the literature to climate change-related SDGs which do not appear to have been employed as a study focus by previous researchers provide strong justification for conducting another systematic literature review. Qualitative methodology is the next most used, accounting for 16% of the sample, with the other methodologies sharing the same proportion of use. Figure 2.2 below depicts distribution of the most commonly used methodologies.

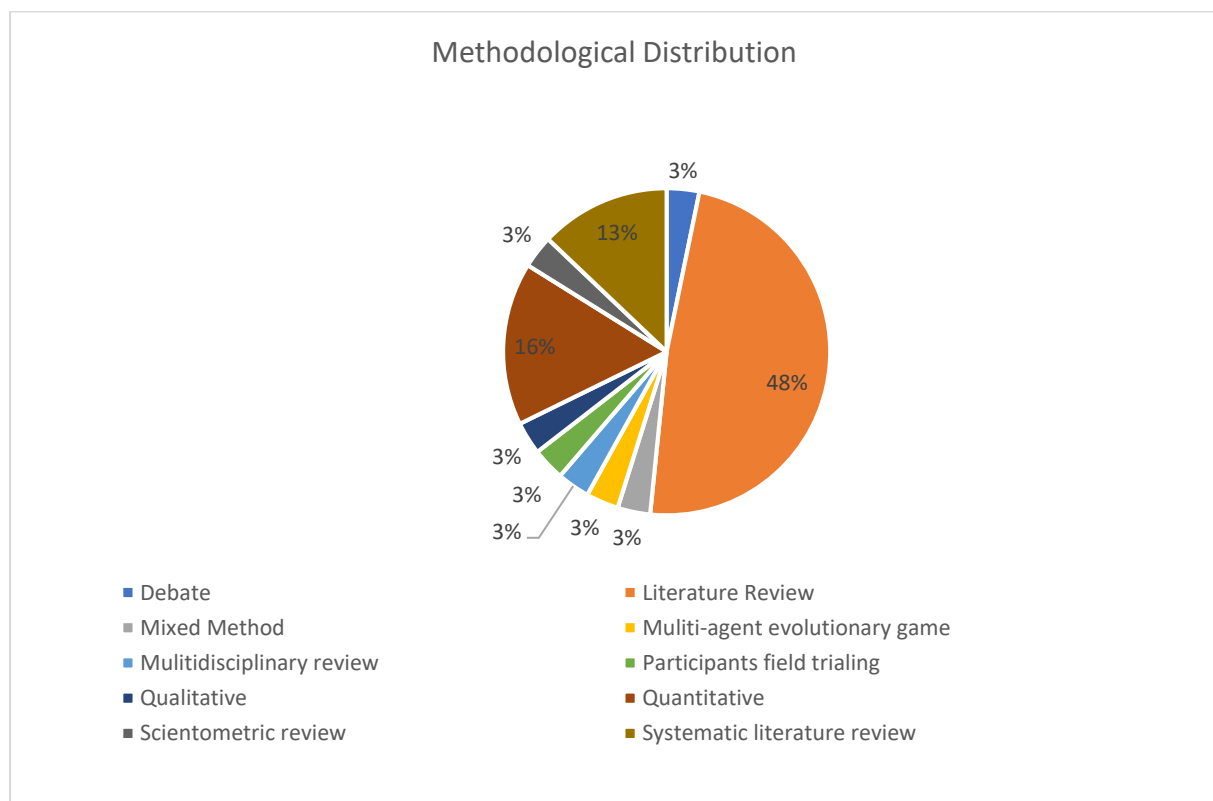


Fig. 2.2 Distribution of research methodologies

The use of several methodologies suggests that climate change researchers are non-monotypic in their approaches to contributing to the literature on the phenomenon.

3.0 Preliminary findings and discussion

This section presents and discusses the preliminary findings per the study's objectives described under Section 1.0.

3.1 Climate change management strategies and projects covered

We explored the climate change management strategies in the literature as being mitigation, adaptation or both. We also examined whether the proposed strategy involved the description or implementation of a named project to meet the adopted management strategy. Interest in the named project was considered for its link to the effectiveness of the used strategy and the associated financing mechanism. We observed a close result in the number of studies incorporating or proposing the combination of both mitigation and adaptation strategies ($n=14$), and those that proposed the use of mitigation strategies ($n=11$). Five of the studies incorporated adaptation strategies, for example, Azimi Fereidani et al., 2021; Mcleod et al., 2019; Woodruff et al., 2020).

In terms of the named project, we found eleven studies not describing any project, with two in this category generally focusing on sustainable investment, in Singhania et al. (2023), and related definitions of green finance sustainability, in H. Cui et al. (2020). Climate-smart agriculture, climate-smart cities, electric vehicles (EV), and energy efficient buildings are other named projects. We summarise these observations in Table 3.1 below.

Table 3.1 Climate management strategies and projects

Strategy	Author	Journal	Project
Adaptation	Venkataramanan et al. (2019)	Journal of Environmental Management	Green infrastructure – stormwater and flood management
	Partey et al. (2018)	Journal of Cleaner Production	Climate-smart agriculture
	Woodruff et al. (2020)	Journal of Environmental Management	Climate-smart agriculture
	Azimi Fereidani et al. (2021)	Journal of Cleaner Production	Energy-efficient buildings
	Mcleod et al. (2019)	Journal of Environmental Management	Management of coral reef ecosystems
Mitigation	Wimbadi and Djalante (2020)	Journal of Cleaner Production	None
	Orsini and Marrone (2019)	Journal of Cleaner Production	None
	Quilliam et al. (2015)	Journal of Environmental Management	None
	Oliveira et al. (2022)	Journal of Environmental Management	Microalgae as renewable resource
	Adegbeye et al. (2020)	Journal of Cleaner Production	Sustainable agriculture options for production
	Makpotche et al. (2024)	Review of Accounting and Finance	Corporate governance and green innovation
	Safiullah et al. (2023)	International Journal of Managerial Finance	Corporate governance and green innovation

	Sadiq Okoh and Chidi Onuoha (2024)	Global Change	Environmental	EV adoption
	Xu et al. (2023)	Journal of Production	of Cleaner	None
	Li et al. (2023)	Economic Analysis and Policy		None
	Lee et al. (2023)	Technological Forecasting and Social Change		None
Mitigation and Adaptation	Singhanian et al. (2023)	Managerial Finance		None (Focuses generally on SI investments)
	H. Cui et al. (2020)	Journal of Production	of Cleaner	None (Focuses on related definitions of green finance sustainability)
	Mcafee (2012)	Development and Change		Payment for Ecosystem Services, Ecosystem Services, Reducing Emissions from Deforestation and forest Degradation in developing countries
	Aversa (2023)	British Food Journal		Climate-related financial risks
	Marti et al. (2023)	Journal of Management Studies		None
	Sharifi (2019)	Journal of Production	of Cleaner	Smart Cities Assessment
	Tan-Soo et al. (2023)	China Economic Review		None
	Peng et al. (2023)	Journal of Environmental Management		None
	Scott et al. (2023)	Journal of Sustainable Tourism		None
	Cooney et al. (2023)	Journal of Production	of Cleaner	Seafood waste valorisation
	Alarcón et al. (2023)	Journal of Production	of Cleaner	Electric mobility, smart cities and road-freight logistics
	Coscieme et al. (2020)	Journal of Production	of Cleaner	None
	Gan et al. (2020)	Journal of Production	of Cleaner	Energy efficient green buildings
	Espeland et al. (2020)	Journal of Environmental Management		None

A key observation in the adopted management strategies is the apparent lack of definition in usage. For example, none of the sample in Table 3.1 defined climate change mitigation or adaptation as a strategy even though the terms were used. UNFCCC¹ defines climate mitigation as the efforts to reduce carbon emissions and enhance sinks (e.g., increasing the area of forests). Climate adaptation is also defined as the adjustments to ecological, social or economic systems in response to actual or expected climatic stimuli and their effects.² We have relied on these definitions to categorise the sample accordingly. We are not immediately able to explain the absence of specific projects by some of the authors since the definitions by UNFCCC connote the implementation of certain tangible activities to meet climate management objectives. Clear association of climate change management studies with clear management strategies enhances investigation of the effectiveness of the adopted management strategies to minimising the adverse consequences of climate change.

¹ <https://unfccc.int/topics/introduction-to-mitigation>

² <https://unfccc.int/topics/adaptation-and-resilience/the-big-picture/introduction>

3.2 Climate change management financing mechanisms

We focused on the reference to financing mechanisms for climate change mitigation and adaptation and observed the near absence of specific financing mechanisms ($n=23$) in the study sample. Other mechanisms were not directly related to the study's objective. For example, NBFIs in Li et al. (2023), while property tax appeared as the focus in Woodruff et al. (2020). Figure 3.1 shows the distribution of climate management financing mechanisms.

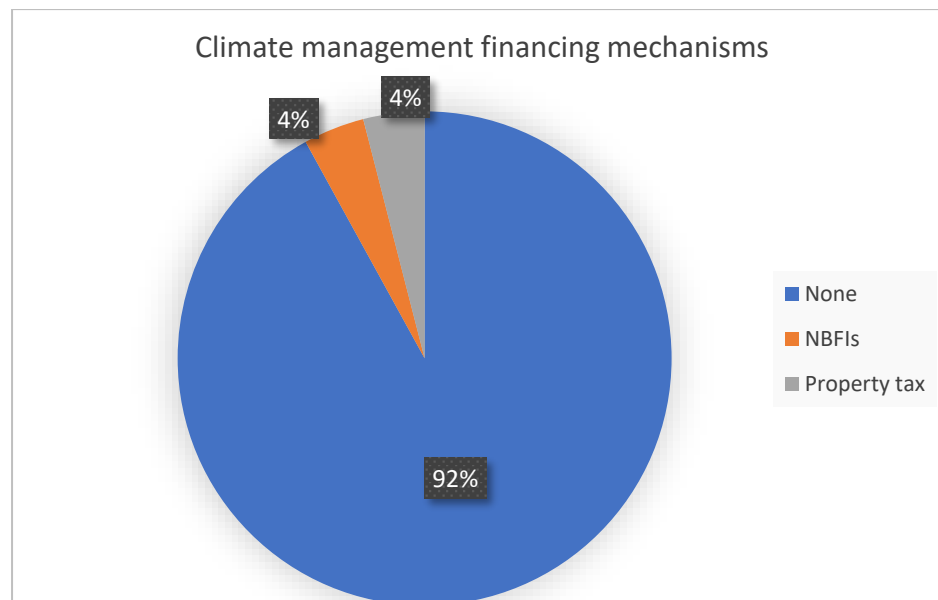


Fig. 3.1 Climate financing mechanisms

Though Li et al. (2023) investigated the influence of green financing and resources utilisation within the Next Eleven (N-11) countries, the authors did not specify any financing strategy in their analyses model. They instead alluded to difficulty by financial institutions in supporting green finance and suggested the regulation of other mechanisms of finance such as Non-bank financial institutions (NBFIs), pension funds, insurance companies, green credit guarantee schemes as alternative to governments in N-11 countries. Woodruff et al. (2020) also examined the financing implications in coastal adaptation as a public good. They mentioned accommodation, protection, retreat, and avoidance as the approaches to coastal adaptation and considered the strategies to financing each of these approaches. Of the financing strategies to the approaches above, property tax appeared as the most commonly adopted.

A number of the articles that conducted a systematic literature review on the subject did not factor in the strategies to managing climate change or the financing mechanisms to raising the needed funds to meet these management objectives. For example, Quilliam et al. (2015) reviewed the literature on green infrastructure for its impact on human health. While green infrastructure such as stormwater and flood management systems directly impact human health, the authors omitted in their study, the significance of climate change management strategies and how they can be funded.

We observed that all research that employed review methodologies in our sample did not directly focus on specific projects and or financing mechanisms, but rather sought to provide more insights on several climate-related concerns. In Table 3.2 below, we summarise the

coverage of climate change management projects and financing mechanisms. We expect to share deeper insights on the projects and financing mechanisms in studies especially within the emerging economies as the review progresses.

Table 3.2 Coverage of projects and financing mechanisms in studies

No.	Author	Project	Financing Mechanism	Frequency
1	Li et al. (2023)	None	NBFIs, pension funds, insurance companies, green credit guarantee schemes	1
2	Woodruff et al. (2020)	Coastal adaptation strategies and local financing mechanisms	Property tax	1
3	Venkataramanan et al. (2019)	Green infrastructure – stormwater and flood management	None	
4.	H. Cui et al. (2020)	None (Focuses on related definitions of green finance sustainability)	None	
5.	Mcafee (2012)	Payment for ecosystem services (PES), Ecosystem services (ES), REDD	None	
6.	Partey et al. (2018)	Climate-smart agriculture (CSA)	None	
7.	Aversa (2023)	Climate-related financial risks	None	
8.	Sharifi (2019)	Smart Cities Assessment (SCA)	None	
9.	Azimi Fereidani et al. (2021)	Energy-efficient buildings	None	
10.	Alarcón et al. (2023)	Electric mobility, smart cities and road-freight logistics	None	
11.	Gan et al. (2020)	Energy efficient green buildings	None	
12.	Mcleod et al. (2019)	Management of coral reef ecosystems	None	
13.	Makpotche et al. (2024)	Corporate governance and green innovation	None	
14.	Sadiq Okoh and Chidi Onuoha (2024)	EV adoption	None	
15.	Sadiq Okoh and Chidi Onuoha (2024)	None	None	
16.	Tan-Soo et al. (2023)	None	None	
17.	Peng et al. (2023)	None	None	
18.	Wimbadi and Djalante (2020)	None	None	
19.	Scott et al. (2023)	None	None	
20.	Orsini and Marrone (2019)	None	None	
21.	Quilliam et al. (2015)	None	None	
22.	Espeland et al. (2020)	None	None	
23.	Safiullah et al. (2023)	None	None	
24.	Xu et al. (2023)	None	None	
25.	Lee et al. (2023)	None	None	

In the next subsection, we discuss our preliminary observation of the regional context of studies to assess the coverage on emerging economies.

3.3 Regional focus of studies

While a number of the studies focused on specific countries due to the study design, others focused on regions. We observed much concentration within the US ($n=4$) and China ($n=3$) contexts. There was a record each for studies on other countries. The US and China are two

countries with high focus of climate change-related studies in the literature and we expect this observation to be amplified with progress of the review. Figure 3.2 depicts the coverage of climate management and financing mechanisms by country.

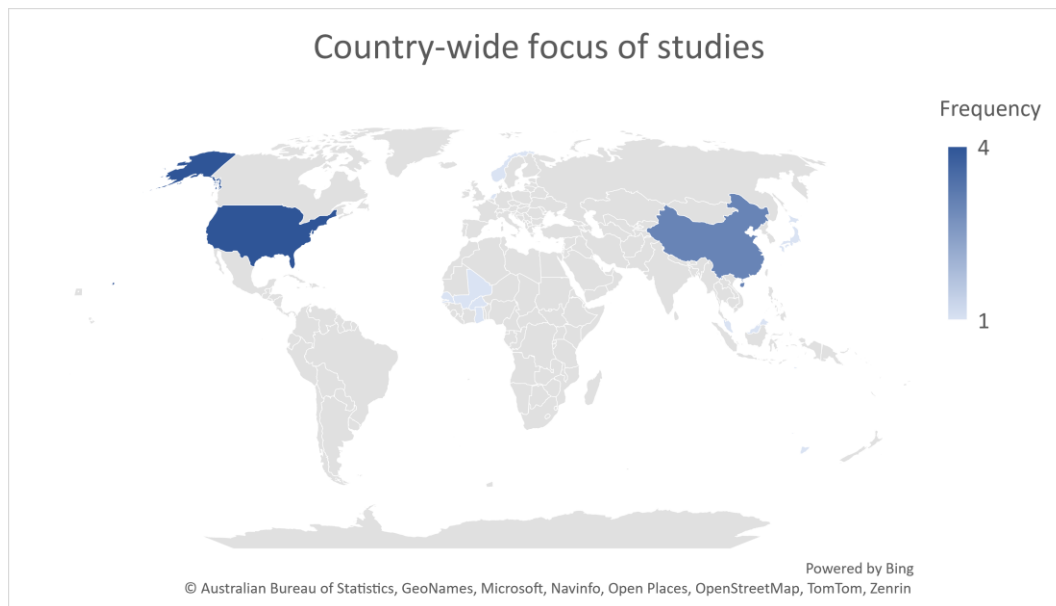


Fig. 3.2 Country-wide focus of studies

Other studies were on regions, for example, Li et al. (2023) focused on N-11 countries, while Quilliam et al. (2015) and Oliveira et al. (2022) focused on the EU and Middle-East respectively. Majority of the studies ($n=17$) were generally focused. We regroup the focus countries to show the regional distribution of studies in Figure 3.3.

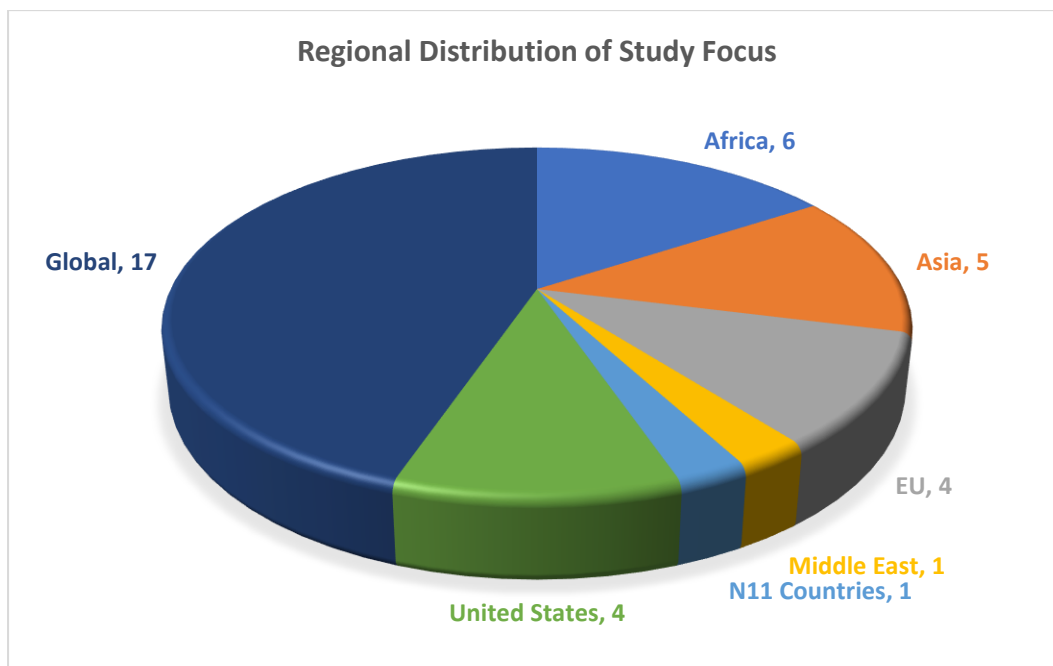


Fig. 3.3 Regional focus of studies

The term “Global” in the figure represents studies that utilised general data sources to generate results that are country neutral. These typically include studies employing literature review methodologies. While N-11 countries include mostly countries in Asia except Egypt and Nigeria in Africa, and Iran in the Middle East, Figure 3.3 reveals a growing focus in Africa and Asia, which together host most of the global emerging economies. However, the observation of concentration of studies on the US, EU and China leaves a gap, which we hope to contribute to filling with our focus on the climate change management strategies in emerging economies.

3.4 Focus on SDGs

This review examined the link between study objectives and the climate change related SDGs mentioned in Section 1.0 above. SDG 7 Affordable and Clean Energy, SDG 11 Sustainable Cities and Communities, SDG 12 Responsible Consumption and Production, and SDG 13 Climate Action are of particular interest to this review since in our view, progress in these goals have significant implications on managing the consequences of climate change. We find only one study mentioning a number of the SDGs, two of which (SDGs 7 and 12) are of interest to this review. Two other studies focused on SDGs 2 Zero Hunger, and 8 Decent Work and Economic Growth. We also observed two other studies that broadly use sustainable development to refer to sustainability related research. Majority of the studies ($n=25$) neither refer to the SDGs or link study results with them. Table 3.3 summarises the context of SDGs in the studies.

Oliveira et al. (2022) examined the resourcefulness of microalgae to achieving sustainable development goals and demonstrated the contribution to meeting 8 of the SDGs. The focus on specific SDGs provide a good measure to track the transition towards environmental sustainability and the management strategies delivering this goal. We consider it imperative for climate change studies to clearly establish a direct link between objectives and results with the climate change related SDGs. On SDG 2, Cooney et al. (2023) proposed a circular economy for seafood waste valorisation for sustainable aquaculture. They noted the climate impact on seafood loss as among other key environmental, economic, and social aspect likely to impact an effective circular economy model implementation. In another study on the SDGs, Coscieme et al. (2020) explored the idea of an incoherence between SDG 8 and sustainable development, by proposing alternative indicators to measure progress towards SDG 8. According to the authors, such investigation was necessary for enhanced coherence between SDG 8 and the overall agenda for sustainable development. Their research focused on the EU, and conceded the inadequacy of the use of GDP as a measure of sustainable growth among EU indicators because of differences in negative and positive growth effects among member countries. The authors also concluded among other reasons, that reliance on GDP presents challenges to the indicators of SDG 8 in assuring significant policy coherence in its measure of sustainable economic growth.

The studies above considered other aspects of the connection between SDGs and sustainable development than the climate related SDGs. The studies also focused on other economies than emerging economies, for example, Cooney et al. (2023) focused on the US, while Coscieme et al. (2020) was on the EU. Only Oliveira et al. (2022) established a link with climate related SDGs, though it also focused on non-emerging economies.

In yet other studies, Singhanian et al. (2023) reviewed the focus of sustainable investments in prior literature and integrated existing literature into seven major groups. They observed the relevance of debt instruments in financing SDGs as among the emerging conversations in the literature. While noting the importance of pooled funding to meeting sustainable financing objectives, the authors acknowledged the increasing interest in green bonds in the literature as the most preferred debt instrument for sustainable investment financing. Green bonds were shown in the literature to be superior to other climate financing instruments such as social impact bonds. However, the study did not specify any link with the financing instrument to a particular SDG and their connection to the achievement of climate mitigation and adaptation goals. Adegbeye et al. (2020) also conducted a review on sustainable agriculture options for other uses in emerging and transitional nations. In our view, the research was related to SDGs 2 and 12 but these were not expressly mentioned in their research. We also did not find any connection of the study with climate change management related SDGs.

Table 3.3 Context of SDGs in the studies

Studies focused on SDGs			
No.	Author	Named SDGs	Frequency
1.	Oliveira et al. (2022)	SDG 1, 2, 3, 6, 7, 12, 14, 15	1
2.	Cooney et al. (2023)	SDG 2	1
3.	Coscieme et al. (2020)	SDG 8	1
Studies mentioning at least SDG			
1.	Singhanian et al. (2023)	None (uses SDGs broadly to describe SDG financing via green bonds and social impact bonds)	1
2.	Adegbeye et al. (2020)	Only mentions "sustainable development goal"	1
Studies with no reference to SDGs			
1.	Venkataramanan et al. (2019)	None	
2.	H. Cui et al. (2020)	None	
3.	Mcafee (2012)	None	
4.	Partey et al. (2018)	None	
5.	Aversa (2023)	None	
6.	Marti et al. (2023)	None	
7.	Woodruff et al. (2020)	None	
8.	Sharifi (2019)	None	
9.	Tan-Soo et al. (2023)	None	
10.	Peng et al. (2023)	None	
11.	Wimbadi and Djalante (2020)	None	
12.	Scott et al. (2023)	None	
13.	Azimi Fereidani et al. (2021)	None	
14.	Alarcón et al. (2023)	None	
15.	Orsini and Marrone (2019)	None	
16.	Quilliam et al. (2015)	None	
17.	Gan et al. (2020)	None	
18.	Espeland et al. (2020)	None	
19.	Mcleod et al. (2019)	None	
20.	Makpotche et al. (2024)	None	
21.	Safiullah et al. (2023)	None	
22.	Sadiq Okoh and Chidi Onuoha (2024)	None	
23.	Xu et al. (2023)	None	
24.	Li et al. (2023)	None	

4.0 Planned next steps and study limitations

We will expand the focus on climate management strategies and their underlying financing mechanisms being adopted in emerging economies. We will also expand the focus on studies' relatedness to the SDGs especially regarding the focus on those closely associated with climate change. While the focus of the literature on the developed economies is not in doubt, we will expand the distribution at the regional and country levels to observe the areas of concentration among the location of emerging economies. The review will also examine the application of theoretical foundations in the design and analysis of studies in order to explore results discussion and the overall methodological rigour of studies.

5.0 Conclusion and limitations

Study conclusions are not being immediately drawn as the review is developing. However, preliminary findings provide ample reasons for the focus on emerging economies. Some perceived limitations include the choice of journal articles in the English Language only to the exclusion of books and other official publications. Also, the word count restriction for a developmental paper limits space for providing deeper insights into our preliminary findings. We expect to shed fuller insights into the subjects of investigation by our study sample and show the similarities, dissimilarities and nuances in the literature.

References

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Appendix 1: Details of literature sample (in descending order of year of publication)

No.	Author	Year	Title	Journal	Impact Factor (Scopus)	AJG 2021 Ranking
1.	Aversa (2023)	2024	Scenario analysis and climate change: a literature review via text analytics	British Food Journal	5.4	1
2.	Makpotche et al. (2024)	2024	Corporate governance and green innovation: international evidence	Review of Accounting and Finance	2.6	2
3.	Sadiq Okoh and Chidi Onuoha (2024)	2024	Immediate and future challenges of using electric vehicles for promoting energy efficiency in Africa's clean energy transition	Global Environmental Change	16.5	3
4.	Singhania et al. (2023)	2024	Sustainable investments: a scientometric review and research agenda	Managerial Finance	2.5	1
5.	Alarcón et al. (2023)	2023	Electric mobility toward sustainable cities and road-freight logistics: A systematic review and future research directions	Journal of Cleaner Production	18.5	2
6.	Cooney et al. (2023)	2023	A circular economy framework for seafood waste valorisation to meet challenges and opportunities for intensive production and sustainability	Journal of Cleaner Production	18.5	2
7.	Lee et al. (2023)	2023	Impact of Paris Agreement on financing strategy: Evidence from global FPSO industry	Technological Forecasting and Social Change	17.2	3
8.	Li et al. (2023)	2023	Green financing and resources utilization: A story of N-11 economies in the climate change era	Economic Analysis and Policy	6.9	1
9.	Marti et al. 2023	2023	The Impact of Sustainable Investing: A Multidisciplinary Review	Journal of Management Studies		4
10.	Peng et al. (2023)	2023	A framework for integrating ecosystem services indicators into vulnerability and risk assessments of deltaic social-ecological systems	Journal of Environmental Management	13.4	3
11.	Safiullah et al. (2023)	2023	Debt overhang and carbon emissions	International Journal of Managerial Finance	4.0	2
12.	Scott et al. (2023)	2023	A review of the IPCC Sixth Assessment and implications for tourism development and sectoral climate action	Journal of Sustainable Tourism	18.9	3
13.	Tan-Soo et al. (2023)	2023	Individuals' and households' climate adaptation and mitigation behaviors: A systematic review	China Economic Review	9.0	2
14.	Xu et al. (2023)	2023	Evaluating and prioritizing the carbon credit financing risks and strategies for sustainable carbon markets in China	Journal of Cleaner Production	18.5	2

15.	Oliveira et al. (2022)	2022	An overview on microalgae as renewable resources for meeting sustainable development goals	Journal of Environmental Management	13.4	3
16.	Azimi Fereidani et al. (2021)	2021	A review of the energy implications of passive building design and active measures under climate change in the Middle East	Journal of Cleaner Production	18.5	2
17.	Adegbeye et al. (2020)	2020	Sustainable agriculture options for production, greenhouse gasses and pollution alleviation, and nutrient recycling in emerging and transitional nations - An overview	Journal of Cleaner Production	18.5	2
18.	Coscieme et al. (2020)	2020	Going beyond Gross Domestic Product as an indicator to bring coherence to the Sustainable Development Goals	Journal of Cleaner Production	18.5	2
19.	H. Cui et al. (2020)	2020	An evolutionary analysis of green finance sustainability based on multi-agent game	Journal of Cleaner Production	18.5	2
20.	Espeland et al. (2020)	2020	Managing risks related to climate variability in rangeland-based livestock production: What producer driven strategies are shared and prevalent across diverse dryland geographies?	Journal of Environmental Management	13.4	3
21.	Gan et al. (2020)	2020	Simulation optimisation towards energy efficient green buildings: Current status and future trends	Journal of Cleaner Production	18.5	2
22.	Wimbadi and Djalante (2020)	2020	From decarbonization to low carbon development and transition: A systematic literature review of the conceptualization of moving toward net-zero carbon dioxide emission (1995–2019)	Journal of Cleaner Production	18.5	2
23.	Woodruff et al. (2020)	2020	Is coastal adaptation a public good? The financing implications of good characteristics in coastal adaptation	Journal of Environmental Management	13.4	3
24.	Sharifi (2019)	2019	A critical review of selected smart city assessment tools and indicator sets	Journal of Cleaner Production	18.5	2
25.	Orsini and Marrone (2019)	2019	Approaches for a low-carbon production of building materials: A review	Journal of Cleaner Production	18.5	2
26.	Venkataramanan et al. (2019)	2019	A systematic review of the human health and social well-being outcomes of green infrastructure for stormwater and flood management	Journal of Environmental Management	13.4	3
27.	Partey et al. (2018)	2018	Developing climate-smart agriculture to face climate variability in West Africa: Challenges and lessons learnt	Journal of Cleaner Production	18.5	2
28.	Quilliam et al. (2015)	2015	Resolving conflicts in public health protection and ecosystem service provision at designated bathing waters	Journal of Environmental Management	13.4	3
29.	Mcafee (2012)	2012	The Contradictory Logic of Global Ecosystem Services Markets	Development and Change	5.9	3

30.	Mcleod et al. (2019)	2019	The future of resilience-based management in coral reef ecosystems	Journal of Environmental Management	13.4	3
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