Green Finance

Review

Insuring a greener future: How green insurance drives investment in sustainable projects in developing countries?

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Abstract: Insurance companies are responding to the global challenge of climate change by introducing green insurance policies, which aim to promote sustainable projects across the globe. These policies offer financial protection and coverage for initiatives related to renewable energy, energy efficiency and other sustainable endeavors. Moreover, they incentivize investment in these projects by providing lower premiums or other financial benefits. In order to assess the impact of green insurance policies on driving investment in sustainable projects in developing countries, this study employed a systematic and bibliometric approach to thoroughly analyze the various forms, instruments, and measurements of green insurance. The study used 490 documents extracted from different databases. The search strategy involved using specific keywords to query the Web of Science, Scopus, science direct, and google scholar databases. A purposive sampling technique was implemented for data inclusion and exclusion. The study's findings indicate that the success of green insurance in developing countries faces several challenges, including inadequate infrastructure, limited awareness and education among individuals and businesses, absence of supportive regulatory frameworks and policies, insufficient demand, political instability, corruption and security concerns. Furthermore, the study finding reveals a need for more research, specifically exploring the effects of green insurance on investment in sustainable development. Hence future studies can use this finding as a benchmark for further studies. The study's novelty lies in its comprehensive analysis of green insurance policies and their impact on driving investment in sustainable projects in developing countries. Based on the findings, the study recommends that insurance companies offer incentives to investors involved in

sustainable projects, such as employing premium shifting strategies that minimize premiums for non-environmentally sustainable projects and redirect those funds toward sustainable initiatives.

Keywords: Green insurance; sustainable projects; investments in sustainable projects

JEL Codes: Q56, Q54

1. Introduction

Global warming caused by climate change presents numerous economic, environmental and social challenges worldwide. Efforts to mitigate these challenges are being undertaken globally (Collier et al., 2021), and the insurance industry plays a significant role in these endeavors. Due to their nature, insurance companies have limitations on what they can insure. However, they can contribute to spreading the costs of losses by adjusting their pricing, terms, and conditions to account for climate-related risks (Mills, 2009). Insurers are also susceptible and sometimes lack sufficient data to make well-informed decisions. Consequently, they face difficulties protecting customers from natural disasters while providing adequate coverage (Belozyorov & Xie, 2021). To overcome these challenges, insurance companies are developing advanced strategies that consider the threat of climate change, and one of the proposed strategies is developing green insurance products.

Green insurance is designed to solve environmental hazards and advance sustainability (Vyas et al., 2021). The insurance industry offers a unique opportunity to contribute to this goal by providing coverage for environmentally friendly projects, promoting sustainable business practices, and encouraging investment in green technologies (Stepanova, 2021).

Over the past ten years (2010–2020), numerous new products and services were introduced by insurance companies to encourage environmentally friendly investments. Kaminker & Stewart (2012) found that around $1.2 trillion in annual premiums were sold globally in response to climate change. More specifically, the insurance sector, at the national level in the United States, has been a leader in encouraging sustainable practices and assisting green innovations. Many insurance providers provide green insurance policies that cover renewable energy sources, energy-efficient homes and green automobiles (Mills, 2003). Similarly, Europe's insurance sector has made notable strides in supporting sustainable practices and tackling environmental concerns. Many green insurance packages in Europe today cover renewable energy projects, energy-efficient infrastructures and environmentally friendly transportation (Mills, 2009).

However, developing countries need to make more progress toward developing a green insurance market compared to more advanced and industrialized nations. According to the World Bank, developing countries are defined as countries with relatively lower levels of economic development, industrialization and per capita income (Kalfin et al., 2022). These countries have inadequate infrastructure, a lack of regulatory frameworks and a lack of legislation to support sustainable projects (Vyas et al., 2021). As a result, many factors play a significant role in the current status of green insurance in developing countries.

Among many other factors that contributed to the slow development of green insurance products and services in developing countries, one significant challenge is the issue of inconsistency across different

markets. The absence of environmentally friendly insurance options, particularly in developing and underdeveloped market segments, creates uncertainty regarding the response of all insurance categories to climate change (Kassinis & Panayiotou, 2018). Another challenge is the need for more understanding and knowledge of green insurance. Many individuals and organizations still need to become familiar with green insurance and are unaware of the potential benefits (Moser, 2010).

Despite these challenges, some countries do their utmost to encourage green insurance in developing countries. One of the exemplary countries is India. The study by Rajesh & Majid (2020) implies that the Indian government has been promoting renewable energy through a scheme that includes a clause for insurance protection for financial investments in renewable energy. In addition, several insurance providers in India work with renewable energy developers to create special insurance coverage for projects incorporating renewable energy investments (Rajesh & Majid, 2020). Additionally, some insurance providers in Africa have begun to offer green insurance policies that cover climate change-related risks, including droughts and floods (Sussman, 2008). For instance, a Kenyan insurance provider has created a plan that protects farmers if a drought causes their crops to fail. However, many African nations still need to adopt such products to encourage investment in sustainable projects (Puschmann et al., 2020). Therefore, it is necessary to encourage the use of green insurance in these regions through education and awareness-raising campaigns.

To summarize, the development of green insurance in developing countries is still in its infancy, but there are encouraging indicators of growth and adoption. There is an increasing demand for creative solutions that can address environmental hazards and advance sustainability (Puschmann et al., 2020). As a result, the study intends to investigate the existing trends of green insurance in developing countries and offer insights into its development and potential. The study's novelty resides in thoroughly examining green insurance practices and how they affect the growth of sustainable project funding in developing countries. The study used both systematic and bibliometric approaches to examine several facets of green insurance, including its forms, instruments and measurements. Hence, this study reviews the overall status of green insurance in developing countries. The objective of this study is to review published scholarly studies on green insurance focused on developing countries and to provide a suggestion for future studies.

2. Materials and methods

This review paper was shaped through literature analysis that looked into green insurance and how it affects investments in sustainable projects in developing countries. The study used keywords such as green insurance, environmental insurance, climate insurance, renewable energy insurance, ESG insurance, sustainable insurance, eco-friendly insurance, investment in sustainable enterprises, and developing countries. The study used these keywords to find pertinent academic papers that covered the nexus of green insurance and sustainable projects in developing countries. The searches were conducted in the Web of Science, Scopus, science direct, and Google Scholar databases. Previous studies also used multiple databases (Hafner et al., 2020). However, using many databases at once led to duplicating a single document. This is because many reputable journals are registered with various databases, resulting in the availability of the same material on different databases. This duplication adds an extra task for academic writers who must sort through duplicated documents to avoid reviewing the same material twice. To resolve this issue of document duplication, the study adopted a systematic approach by merging sets of documents from the databases in a Microsoft Excel spreadsheet. The study also searched for relevant

industry reports and publications from organizations such as the International Finance Corporation and the United Nations Development Programme.

2.1. Inclusion and exclusion criteria

The study used inclusion and exclusion criteria to include and exclude relevant documents needed for this study. The inclusion criteria, such as language (only documents written in English), publication year (those studies published after 2015), and status of the documents, were taken into account (only published documents). Other documents excluded articles that did not directly relate to the topic or were not peer-reviewed. The search was limited to articles published in English between 2015 and 2022. The rationale for using 2015 as a benchmark year relates to the commitment and agreement made on the Paris Agreement in 2015. The awareness and commitment to climate change gained popularity after ratifying the Paris Agreement. The study also excluded articles that focused solely on developed countries or did not provide a comprehensive analysis of the role of green insurance in driving investment in sustainable projects. After conducting the initial search, the study screened the articles based on their titles and abstracts and then read the full texts of the selected articles to determine their relevance to the topic. At the same time, the study also cross-checked the references of the selected articles to identify additional relevant literature. As a result, 631 documents were initially extracted; after the criteria, only 490 documents were used for analysis. The following Figure 1 of the study analyzed the study selection process flow chart. The flow diagram was prepared using the PRISMA flow diagram for registered and unregistered databases.
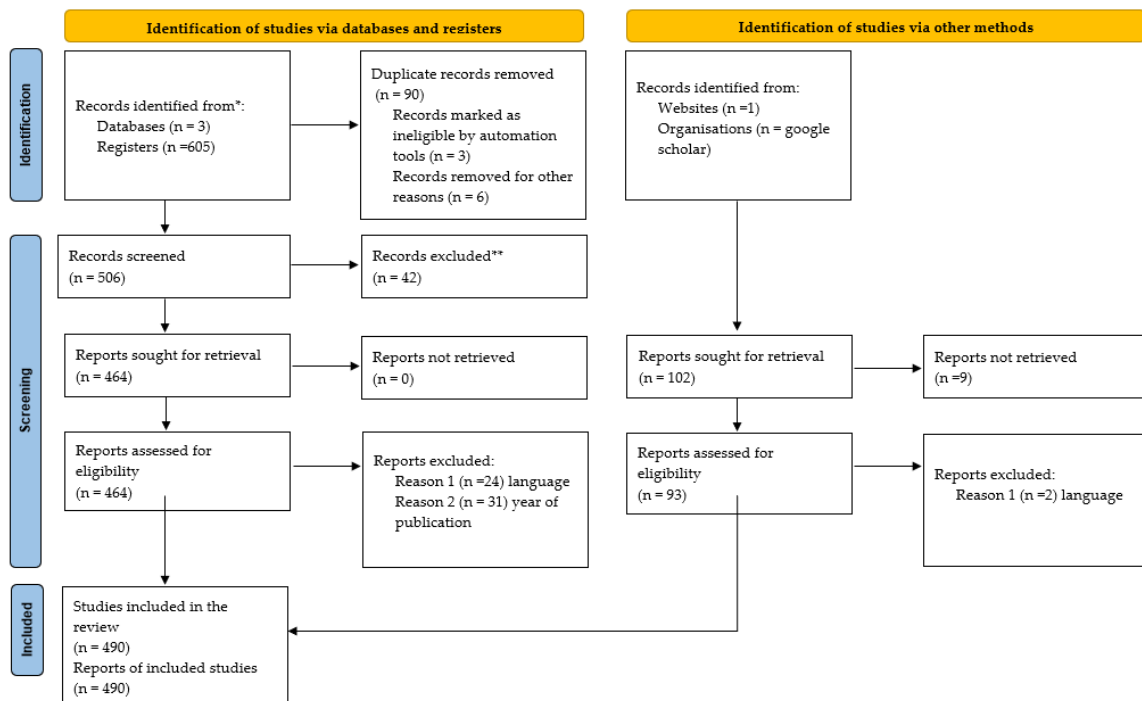

Figure 1. Study selection process flow chart.

The data collected included the year of publication, author names, article titles, keywords, and abstracts of each study. The study used Mendeley reference manager throughout the procedure to ensure correct citation and document management. To further visualize and analyze the studies' citation network and co-citation patterns, the study used R-studio/bibliometric/shiny tools. As a result, the study was able to draw conclusions regarding the general organization of the research field and identify key connections between the studies. The study has combined the findings of the selected publications and organized them topically in order to comprehend better the fundamental ideas of green insurance and sustainable investment in developing countries. The study also highlighted successful green insurance programs that have encouraged investment in sustainable projects in developing countries while identifying common issues and opportunities in this field. The study also made suggestions for further investigation and action in this area after analyzing the significance of the findings for investors, governments, insurers, and other stakeholders.

3. Results

Sustainable development is a key priority for both industrialized and developing countries, and the green features of the future are now a serious issue. One technique to encourage investment in sustainable projects is green insurance, particularly in developing nations where environmental risks and problems are frequently more severe. This review article outlines how green insurance might encourage sustainable investment in developing countries. In doing so, 631 articles were scanned, but 141 were rejected because of language problems and because their publication year needed to fulfill the criteria for inclusion. The remaining articles (490) offer valuable details on the possible opportunities and challenges of green insurance to support investment in sustainable projects. The findings from previously conducted studies are provided in the study's subsequent section. The study combined both Bibliometric and systematic review methodologies to summarize the results. The study follows the bibliometric approach to report some general information about the data. However, deep scanning is followed to explore the aim of the systematic approach.

3.1. Trends of the annual publication

The study set a time frame between 2015–2022 for data extraction. This period is selected due to the Paris Agreement in 2015, which emphasizes the concern of climate change. Concerning green insurance, the study found that, despite the growing popularity of research areas (climate change and green aspects) since 2015 (Paris Agreement), the number of publications made during the year 2015 with related to green insurance was counted as 16 documents, which is lower compared to others. This may be down to the scholar's awareness at that time, as the issue of climate change was not highly a part of a discussion on political and economic decisions. The results of Figure 2 show a substantial increase in publications after 2016, indicating that the study field is drawing more scholarly attention. The trend between 2016 and 2022 still exhibits some variation, with 2019 seeing a decline in publications. This could be because of numerous things, like the COVID-19 epidemic and geopolitical crises, which caused scholars to focus on other topics.

Notably, the highest number of publications in the study area was 80 in 2021, highlighting the urgent need for more research in this area. So far, 14 documents have been published and made

available for readers in 2023. The following Figure 2 of the study shows the trend of annual publication throughout the study period.
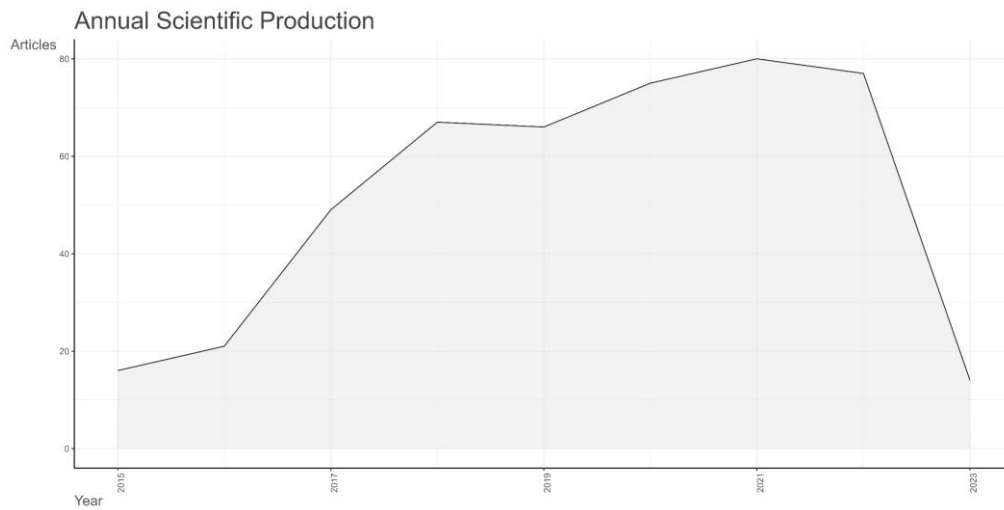

Figure 2. Annual publication trends.

3.2. Keyword analysis

The keywords for this topic reflect the importance of green insurance in promoting sustainable development in developing countries and the impact of global events such as the Paris Agreement and the COVID-19 pandemic on scholarly attention and publication trends in this area. These keywords highlight the need for more research on topics related to green insurance. They can help ensure that relevant studies are discoverable and accessible to scholars and practitioners in the field. The selected keywords included green insurance, environmental insurance, climate insurance, renewable energy insurance, ESG insurance, sustainable insurance, eco-friendly insurance, investment in sustainable projects, and developing countries. Based on this search, Figure 3 of the study discusses the keyword finding.

Figure 3. Keyword analysis.

Analyzing words that appear frequently in documents related to the study area reveals important insights. The keywords that stand out the most include climate change, risk management, rural electrification, investment resilience, sustainability, development, and developing countries. Surprisingly, the term green insurance did not make it to the study's top 20 most frequently used words. This indicates that the impact of green insurance on investment in sustainable development is less widely researched than climate change and other sustainable development topics. The absence of these terms from the top 20 keywords sheds light on the areas of study that require further attention. This finding is also supportive of annual publication trends. Specifically, there is a need to explore the relationship between green insurance and new technological innovations to mitigate climate change. This is an important aspect that has yet to receive sufficient attention so far. By diving deeper into this area, researchers can uncover new opportunities for green insurance to contribute to sustainable development.

3.3. Cooccurrence analysis

The linkage between the words used in this review is examined using the cooccurrence analysis. The term "cooccurrence" describes how frequently two or more things, such as words or ideas, appear together in a specific context. Cooccurrence analysis is a method for discovering connections between words or phrases based on how frequently they appear in a text. Figure 4 of the study illustrates the findings of cooccurrence among the articles used in this investigation.

Figure 4. The result of the cooccurrence analysis.

According to the study's findings, certain hues are associated with various terms that have been studied in the past. The blue color connects studies on sustainable development and developing countries. The studies on investments, infrastructure, and climate change in developing countries are linked, as shown by the yellow tint. The green color connects the studies done in China on renewable energy, sustainable development, and climate change. Unsurprisingly, there is a high cooccurrence between sustainability and sustainable development in developing countries. However, no proof exists that investments in and projects related to sustainable development coexist with green insurance.

Green insurance can be crucial in tackling the problems caused by climate change, such as the escalating frequency and intensity of natural disasters, by offering financial protection against climate-related hazards. At the same time, insurance can help reduce the vulnerability of communities and businesses to the consequences of climate change. This can encourage investment in sustainable projects by reducing the perceived risk associated with such investments.

Another implication is that by encouraging financial investments in green projects, green insurance can act as a vehicle for advancing sustainable development. Green insurance policies often offer cheaper premiums or other financial incentives for projects that adhere to particular environmental requirements, such as lowering greenhouse gas emissions or fostering biodiversity conservation. Green insurance can encourage financial participation in environmentally friendly initiatives in developing nations by bringing together the interests of insurers, investors, and governments. This connection has significant ramifications for those working to advance sustainable development in developing countries, such as policymakers, insurers, investors, and other stakeholders. The significant co-occurrence between climate change and insurance emphasizes mitigating climate-related risks and advancing sustainable development using cutting-edge financial tools like green insurance.

On the other hand, the red color hue connects other research projects that were approached from other angles. Surprisingly, China has appeared in the red-colored words. This suggests that most of the research materials used in this study were produced in China. For other developing nations, learning from China's research and development in green areas could be a valuable lesson. Furthermore, the study finding shows that highlighted keywords still need to be added to the topic of investment in sustainable development. This could be a powerful argument for why studying green insurance and financial investments in sustainable projects are crucial for developing countries.

3.4. Collaboration network

The study used two different approaches to map the collaboration network. The first approach was to map the collaboration network among authors. This approach is essential to see how knowledge diffusion flows among experts. It also helps to increase the impact of research by facilitating the dissemination and uptake of research findings. Researchers who are well-connected in their field may have greater visibility and influence, and their work may be more widely cited and recognized. It also fosters innovation by promoting interdisciplinary collaboration and knowledge exchange. As a result, Figure 5 of the study shows the collaborative map among the authors whose documents are used in this study.
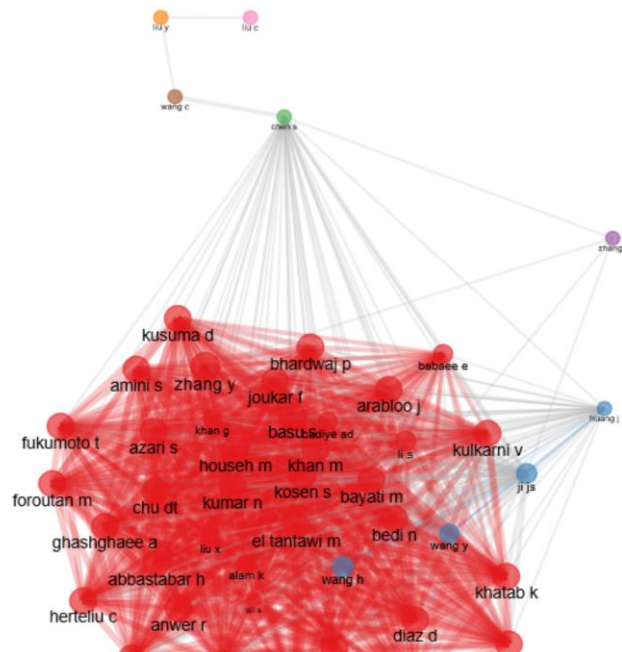

Figure 5. Collaborative network (authors).

The map was drawn with different colors (red, green, grey, pink, yellow and blue). The finding is likely the same as the one discussed on the cooccurrence of words. The authors have a high collaboration network across the globe. Especially the line highlighted with green color, which represents the author's name (Chen, 2019). These authors have a high collaboration network, with the majority of the authors studying the issue of the study area. This author conducted a study to analyze the current situation and progress toward China's 2030 health-related Sustainable Development Goals. As a result, the number of authors who participated in collaborating on this document was 35. It is the highest collaborative network among studies conducted in this area. The red color also shows the network of authors who collaborated in producing scientific results in the study area. Most authors from this group (red color) have a high collaboration network with the author Chen (2019). The red color represents studies focusing on broader themes related to sustainable development, such as green finance, productivity, agricultural insurance and air pollution. These studies may address topics such as the potential of green finance to drive investment in sustainable projects, the role of agricultural

insurance in promoting food security and reducing poverty, and the impact of air pollution on human health and the environment. However, the blue represents studies focusing specifically on the relationship between insurance and climate change, a highly relevant and severe issue given the increasing frequency and severity of climate-related risks. These studies may address topics such as green credit policy, government behavior and the quality of green innovation of enterprises. The remaining colors collectively represent studies conducted on the design of insurance products that can effectively manage climate-related risks, the potential impact of climate change on insurance markets and the role of insurance in promoting adaptation and resilience to climate change. The finding of this specific result implies that there are high collaboration networks among authors in conducting sustainability and sustainable development studies. However, there is a lack and frequency of collaboration on the studies related to green insurance. Furthermore, Figure 6 of the study further shows the collaboration map among countries.
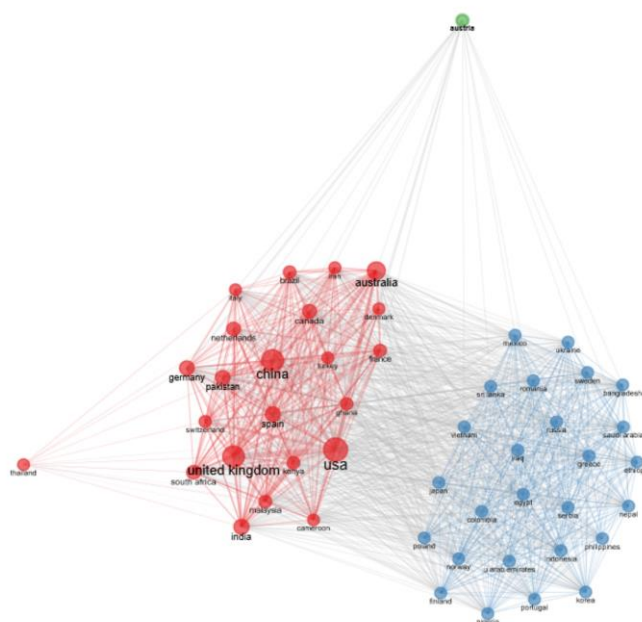

Figure 6. Countries collaboration map.

Figure 6 shows a collaboration network across the world. Three different colors mark the networking. The blue color represents countries collaborating with each other in developing countries. In contrast, the red color shows a collaboration network among those countries from both developing and developed countries. The green color represented with country Austria which has a high collaboration network with all countries from developing and developed countries. Thailand has also had a high collaboration network with other countries, both developing and developed. However, the collaboration network is low compared to Austria. As evidenced from the map, most countries are in the collaboration map, except for some countries from northern America and Europe. At the same time, the number of countries participating in this collaboration network in African countries is less compared to other continents. The result can be a surprise for someone who is simply looking at the

topic and seeing the collaboration map. Because the topic was only taken into account the developing countries. However, more than 75 percent of the world is included in the collaboration map. This happened mainly because most of the documents used in this study are written by affiliated organizations affiliated with developed countries.

3.5. Conceptual structure map

The study used a conceptual structure map to discover the significant ideas, themes and links within a specific field of study. Building a conceptual structure map before undertaking a bibliometric review of the research literature is helpful. A conceptual structure map can help researchers in spotting trends in the literature, knowledge gaps and possible research areas by graphically displaying the relationships between various concepts. As shown in the following Figure 7 of the study. The map has two different colors, which are presented as a set of clusters. Both red and blue collected the main keywords used and linked them together as a network among the documents used in this study. As a result, those keywords that fall in the cluster marked by red color are connected. At the same time, those keywords that fall into the blue cluster are connected. The general finding of this map implies that the research topics used to develop the study map are varied and assumed to be inclusive.
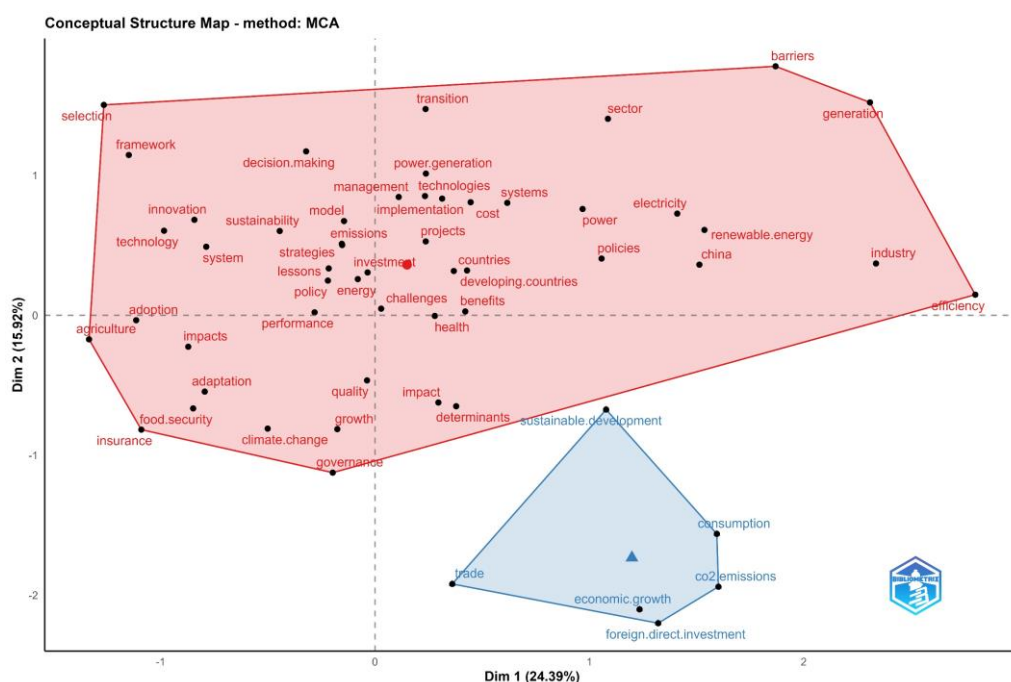

Figure 7. Conceptual structure map.

4. Discussion

Green insurance policies have been developed to encourage and incentivize investment in sustainable projects such as renewable energy, energy efficiency and climate adaptation (Nobanee et al., 2021). These policies provide financial protection to project developers and investors, which reduces investment risk and encourages more investment in sustainable projects (Pugnetti et al., 2022).

Recently, adopting sustainable practices has started in numerous industries, including forestry and agriculture, and has also been facilitated by green insurance coverage (Yang et al., 2017). Numerous studies have been conducted on this subject to understand how the insurance sector responds to climate change. Mills (2009) conducted one of the earliest studies in this area to examine how the insurance industry responded to climate change. The study employed a direct survey of insurance companies and a review of more than 300 sources. The study's findings demonstrate that, despite the insurance sector's significant contribution to the fight against climate change, there remain limitations on the risks that insurers can cover.

Furthermore, Yang et al. (2017) conducted a study to examine the adoption of green technology and identify strategies for insurance providers to provide supplementary protection for uncertified green buildings. In doing so, interviews with experts and businesspeople were held while gathering information for the study. The study results indicate that green commercial building insurance must be established to ensure complete coverage for all green buildings. These findings demonstrate the insurance industry's need to handle climate change challenges more actively. A study by Collier et al. (2021) analyzed the impact of climate change and insurance on local economies and ways of life. The study investigated insurance companies' responses to climate change, the challenges they encounter in defending clients against natural disasters and the possible repercussions of delaying climate change action. The study examined the scientific understanding of climate change and economic losses from weather-related natural disasters to investigate how the insurance sector is affected by and reacts to it. The study used different case studies to examine the impact of climate change. The study's findings indicated that insurers are aware of the necessity to financially protect against climate threats because they can lead to higher long-term expenses. It also raised awareness of the challenges insurers face in protecting clients from natural disasters due to inadequate data and climate change becoming a significant worry for the sector.

In addition, Nobanee et al. (2021) conducted a study investigating the concept of green and sustainable life insurance. The study gathered numerous relevant studies from the Cambridge online database, and bibliographic clustering analysis was carried out. According to the study's findings, implementing green insurance coverage can be a helpful way to promote ethical corporate practices and reduce environmental hazards. The results of this study demonstrate how green insurance could encourage financial support for environmentally friendly initiatives in developing countries. To support this, a more recent study by Belozyorov & Xie (2021) found that the green insurance industry can contribute significantly to sustainable development by reducing industrial transformation risks, improving environmental protection capabilities and improving residents' living standards. The authors draw upon China's experience developing its green insurance industry as a helpful reference for other developing countries or regions to pursue their sustainable development goals through green finance. Besides, Christiansen (2021) conducted a study investigating the potential of integrating ecosystem-based adaptation and insurance to govern ecosystem rents in a biopolitical context. The study's findings suggest that integrating ecosystem-based adaptation and insurance can be a helpful strategy for biopolitical regulating ecosystem rents.

The implementation of green insurance programs faces several difficulties despite their potential advantages in encouraging investment in sustainable initiatives in developing countries. The main obstacles are the absence of data and a lack of scientific knowledge of the threats associated with climate change. Due to this, insurance companies may need help to appropriately estimate the risk connected with sustainable projects and establish the proper premiums. Furthermore, the availability

of data on the effectiveness of these schemes is often limited, making it challenging to assess their impact and determine best practices (Mills, 2003). This argument was also supported by the study conducted by (Hou & Wang, 2022), which argues that there is a lack of comprehensive data on the effectiveness of these initiatives and that some insurance lines have not yet addressed climate risk practices. Additionally, the high cost of capital and the restricted access to credit in developing and poor countries are considered further problems for the un-development of green insurance in developing countries. Due to this, it may be challenging for project developers to obtain the required finance to carry out sustainable projects and for insurance firms to provide coverage for these projects (Belozyorov & Xie, 2021). Furthermore, regulatory and policy uncertainties can also hinder the adoption of green insurance schemes (Green et al., 2016).

In many cases, insurance companies may need to partner with local financial institutions or governments to provide affordable financing options to project developers. The development and implementation of these plans may require further government assistance as insurance companies may encounter difficulties negotiating complex regulatory regimes. Adopting green insurance policies may also be hampered by a lack of public understanding and education about their advantages (Hou & Wang, 2022). Despite these challenges, examples of green insurance programs have stimulated investment in sustainable initiatives in developing countries, such as the African Risk Capacity (ARC), Blue Marble Microinsurance and MicroEnsure (Kalfin et al., 2022). It may be possible to advance the adoption of green insurance plans and encourage investment in sustainable projects in developing countries by addressing these issues and cooperating with governments, insurance firms and other stakeholders. Table 1 of the study is shown below, along with a few illustrations of effective green insurance programs that have encouraged financial involvement in environmentally friendly initiatives in developing countries.

Table 1. Only some examples of successful green insurance in developing countries.

Green Insurance Scheme	Developing Country	Sustainable Projects Supported	Citation
African Risk Capacity (ARC)	Multiple African Countries	Climate Risk Management and Agricultural Drought Insurance	(Johnson, 2021)
Blue Marble Microinsurance	India, Philippines and Kenya	Microinsurance Products for Small-Scale Farmers and Fishermen	(Mosley et al., 2003)
MicroEnsure	Multiple Developing Countries	Climate and Health Insurance for Low-Income Communities	(Mkhize, 2012)

African Risk Capacity (ARC) is a green insurance scheme that operates in multiple African countries and focuses on climate risk management and agricultural drought insurance. The scheme provides participating countries with financial and technical support to help them respond to natural disasters and extreme weather events (Johnson, 2021). The ARC uses a risk modeling system that helps identify areas most vulnerable to climate change impacts and provides early warning systems to communities at risk. This approach has helped to improve African communities' resilience to climate change's impacts and reduce the financial losses associated with natural disasters. Another successful green insurance scheme is Blue Marble Microinsurance, which operates in India, the Philippines and Kenya (Garikipati et al., 2003). The scheme provides microinsurance products for small-scale farmers

and fishermen vulnerable to climate change impacts. Insurance products help farmers and fishermen from crop failures, fish kills and other climate-related risks and provide them with financial security in the face of these risks. The scheme has successfully increased insurance among low-income communities and promoted sustainable agriculture and fisheries practices. MicroEnsure is another green insurance scheme that operates in multiple developing countries and focuses on climate and health insurance for low-income communities (Mkhize, 2012). The scheme provides insurance products that cover the costs of medical treatment for climate-related health conditions, such as malaria, dengue fever and cholera. The insurance products also provide financial support for families affected by climate-related disasters, such as floods, droughts and hurricanes. The scheme has successfully improved the health and well-being of low-income communities and reduced financial losses associated with climate-related disasters. (Hazell et al., 2010)

Studies emphasize the importance of companies adopting green insurance policies to mitigate climate-related risks, particularly in developing countries where investment in sustainable projects is limited. Green insurance policies provide financial security to investors and project developers and promote the adoption of sustainable practices in various industries, which can help reduce greenhouse gas emissions and improve the resilience of systems to climate change impacts. However, insurers face challenges in protecting customers from natural hazards, and more data is needed on the effectiveness of these initiatives. Collaborative efforts between governments, insurance companies and other stakeholders are required to develop policies tailored to developing countries' specific needs and encourage green insurance policy adoption. Nevertheless, adopting green insurance policies has the potential to drive investment in sustainable projects and promote sustainable business practices, which is crucial in the face of climate change.

5. Conclusions

In summary, green insurance can potentially drive investment in sustainable projects in developing countries. Green insurance policies provide financial security to investors and project developers, which reduces investment risk and encourages more investment in sustainable projects (Belozyorov & Xie, 2021). Green insurance policies also promote adopting sustainable practices in various industries, positively impacting mitigation and adaptation. However, more must be done to promote the adoption of green insurance policies in developing countries (Pugnetti et al., 2022). The result of the study implies that challenges such as lack of infrastructure, lack of awareness and education among individuals and businesses, lack of regulatory frameworks and policies to support, lack of demand, political instability, corruption and security concerns are found challenging for the success of green insurance in developing countries.

In addition to these challenges, the study findings also indicate that the impact of green insurance on investment in sustainable development is less widely researched than climate change and other sustainable development topics. This can be evidenced by the keyword trend with respect to the term green insurance, as it did not make the top 20 words frequently used in the study. The absence of these terms from the top 20 keywords sheds light on the areas of study that require further attention. At the same time, the number of countries producing research publication in developing countries are less compared to the other section of the world. Surprisingly, developed countries' scholars are leading by conducting many studies in the study area. This needs to be another motivation for scholars affiliated with developing countries to conduct further studies. The study is limited to using data between 2015–

2022. The reason for using this data was justified in the methodology section. However, the author suggests other scholars expand their sample size if they are willing to investigate the same issue. These could be helpful in coming up with different findings. The challenges and opportunities highlighted during the review were based on data extracted from the selected databases. The author suggests other scholars investigate the study on hand with different methodological approaches. At the same time, academic scholars can go deep to identify how specific countries are responding to climate change through the establishment of green insurance. Finally, the study recommends that all concerned bodies collaborate with governments, insurance companies and other stakeholders to adopt green insurance policies. At the same time, insurance companies should provide some incentives to investors engaged in those sustainable projects through premium shifting; insurance companies should develop strategies that minimize the premium on non-environmentally sustainable projects and encourage that premium focus on sustainable projects.

Use of AI tools declaration

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

Conflicts of interest

The author declares no conflict of interest.

Reference

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