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An Analysis of Real Estate Market Responses towards Climate Resilient Policies in Malaysia and Indonesia

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Abstract
As global warming increases climate-related disasters, countries must address its impact on real estate. Malaysia's National Policy on Climate Change, Green Building Index, and National Urbanisation Policy, along with Indonesia's National Action Plan on Climate Change, Climate Resilience and Adaptation Strategy, and Disaster Management Law, highlight climate resilience in real estate. This study examines these policies and their effects on the real estate markets in Malaysia and Indonesia using qualitative methods. The findings reveal that property values in both countries have increased due to a growing emphasis on sustainability and durability in the market.

Keywords: Climate Resilience; Real Estate; Market Response, CRAS

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1.0 Introduction

Climate change poses significant challenges to real estate through increased risks of property damage, shifting migration patterns, heightened development costs due to stricter regulations, and evolving mortgage lending practices. This has led to a growing emphasis on climate-resilient infrastructure and sustainable development practices to mitigate long-term risks. In Malaysia and Indonesia, these challenges are increasingly relevant, particularly in coastal cities like Kuala Lumpur, Jakarta, and Penang, where rising sea levels and flooding are critical concerns. Rapid urbanization in both countries compounds the problem, with demand for resilient infrastructure and sustainable housing intensifying. In Indonesia, Jakarta's sinking land and frequent floods have led to discussions about relocating the capital (Abidin, 2021), while in Malaysia, stricter environmental regulations are being introduced in new developments to mitigate these risks (Hezri and Nordin, 2006). Both nations are gradually integrating climate adaptation into urban planning and housing policies, although balancing economic growth with sustainability remains a critical challenge.

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Malaysia and Indonesia have climate-resilient real estate laws and policies to limit the risks by promoting green building, tighter rules, and sustainable urban planning. Developers, investors, and purchasers must focus on climate resilience and buy resilient assets. Market behavior in the real estate sector is increasingly influenced by the enforcement of climate policies, market knowledge, and the value of climate-resilient features. Regulatory frameworks, such as stricter building codes and carbon pricing, are driving real estate investors and developers to prioritize resilient and sustainable assets. This shift in behavior is particularly evident in regions vulnerable to climate-related disasters like flooding, where property values are affected by climate risks. Studies highlight that effective policy enforcement and increased market awareness lead to a greater focus on climate resilience, impacting asset values and market dynamics (UNEP FI, 2022; OECD, 2021). Therefore, through qualitative research method, this article examines Malaysian and Indonesian real estate markets and climate-resilient policies. By adopting comparative analysis, this research will assess current legal frameworks and propose recommendations to determine how these regulations have influenced property prices, investment decisions, and market demand.

2.0 Literature Review

Climate resilience is a system or asset's ability to foresee, prepare for, respond to, and recover from climate threats. For climate change mitigation, real estate design, construction, and management must be flexible and sustainable. Extreme weather, sea-level rise, and temperature variations affect property values (IPCC, 2014). Because of its lengthy lifespan and large capital expenditure, real estate is sensitive to climate change. Properties are common in coastal, floodplain, and harsh weather environments. Real estate developers, investors, and policymakers prioritize climate resilience. Lack of climate resilience increases physical damage, market value loss, and insurance costs, making properties less desirable to investors and purchasers (Keenan, Hill, & Gumber, 2018).

Climate resilience in real estate affects the economy. According to studies, climate-resilient assets might command a premium due to their reduced risk profiles and lower long-term costs. Energy-efficient and flood-defended properties have lower running costs and insurance rates (Kok, McGraw, & Quigley, 2012). Investor asset risk management and value preservation are also focussing on climate resilience (Hedrick-Wong & Angelopulo, 2017). Real estate corporations are realising the necessity of climate resilience to preserve assets and maintain long-term sustainability. Energy-efficient systems, flood defences, and sustainable building materials help homes weather climate change. These assets are more valuable and attractive to investors (UNEP, 2014).

The Southeast Asian real estate market has risen quickly in the past two decades due to urbanization, economic growth, and foreign investment. Two of the region's main economies, Malaysia and Indonesia, have grown their property sectors (Akeampong & Addae-Dapaah, 2021). Climate change and environmental sustainability have been challenges with growth. Rapid expansion has caused real estate growth in flood- and landslide-prone areas. In Malaysia, increasing sea levels threaten coastal projects, whereas in Indonesia, earthquakes and tsunamis threaten built environment resilience (Sheng, Shamsudin, & Mohamed, 2010).

Malaysia and Indonesia have developed sustainability initiatives to encourage greener, more resilient real estate construction. Malaysia's Green Development Index (GBI) supports sustainable development through green grading. Energy, water, indoor environmental quality, and other sustainability issues are assessed by the GBI (Nawawi et al., 2017). The Indonesian Green Building Council (GBCI) and CRAS support sustainable real estate development. These programs have motivated real estate developers to add sustainable elements and improve climate resilience awareness (Wardhani & Susilawati, 2020).

Southeast Asian markets have reacted differently to sustainability. Institutional investors and environmentally conscious buyers want green buildings and climate-resilient properties, but several barriers prevent implementation. Sustainable building costs are unknown to developers and customers, and sustainability standards must be more consistently implemented (Akeampong & Addae-Dapaah, 2021). Malaysian GBI-certified homes enjoy higher occupancy and rental rates. Sustainability measures are well received, although green building penetration is low relative to established markets (Nawawi et al., 2017). Indonesian markets react differently in cities and rural areas. International investors and corporations are boosting the demand for green construction in Jakarta and other major cities. The persistent economic and infrastructure inequalities in developed countries pose significant challenges to the effective implementation of sustainable practices. These disparities not only undermine the progress toward global sustainability goals but also restrict equitable access to essential services, highlighting the urgent need for targeted interventions to address these issues (van Niekerk, 2020; OECD, 2021). Legislation, financial incentives, and public awareness are typical real estate climate-resilient policies. These policies promote energy efficiency, sustainable building, and property development in safer, less exposed areas to lower real estate asset vulnerability to climate threats. (Hino, 2018).

Malaysia's Low Carbon Cities Framework (LCCF) uses climate-resilient measures to minimize urban development's carbon footprint and increase infrastructure resilience. LCCF supports green development, public transit, and trash management for sustainable city design (Sheng et al., 2010). The Indonesian Climate Resilience and Adaptation Strategy (CRAS) enhances land use planning, catastrophic risk reduction, and sustainable development to boost climate resilience. CRAS also emphasizes climate resilience in national and local policies to make future developments more climate-resistant (Wardhani & Susilawati, 2020). Climate-resilient policies have influenced Malaysian and Indonesian market values and investments. Climate-resilient homes sell for more because they are lower-risk investments with long-term sustainability advantages. Malaysian property values have risen, especially in GBI-certified or climate-resilient areas (Nawawi et al., 2017). Due to its diverse economic and environmental contexts, climate-resilient policies have affected market values differently in Indonesia. However, investors are increasingly considering climate resilience, especially in vulnerable nations (Akeampong & Addae-Dapaah, 2021).

Climate-resilient measures boost real estate markets but are difficult to execute. Regional disparities in Malaysian policy enforcement include a lack of sustainable development infrastructure and resources. Public education on real estate climate resilience is also needed (Nawawi et al., 2017). In Indonesia, inconsistent regulatory enforcement and local government commitment hamper climate-resilient measures. Some Indonesian areas are more proactive in improving real estate climate resilience due to decentralization (Wardhani & Susilawati, 2020).

3.0 Research Methodology

This research is driven by specific objectives that arise from identifying key research questions in the field of climate-resilient real estate development. The primary aim is to pinpoint existing gaps in practices related to climate resilience within Malaysia and Indonesia's real estate sectors. By analyzing these gaps, the study seeks to develop recommendations for policy enhancement in climate-resilient real estate initiatives.

To address these objectives, the paper employs a content analysis methodology, which involves a comprehensive review of relevant literature. This includes scholarly articles, policy papers, and both published and unpublished works, alongside relevant newspaper publications. This systematic approach not only highlights the current state of research but also facilitates a deeper understanding of the challenges and opportunities in implementing climate-resilient strategies. As stated by Harwood and Garry (2003), content analysis serves as a vital method for examining diverse types of data, including both visual and verbal information. By categorizing phenomena or events into defined segments, this technique enhances the ability to analyze and interpret complex information effectively. It not only facilitates a clearer understanding of underlying patterns and themes but also supports robust conclusions that can inform decision-making and policy development.

Moving forward, the findings from this analysis can inform policymakers and stakeholders in the real estate sector about best practices and effective strategies for enhancing climate resilience. This could include developing specific guidelines for sustainable building practices, improving infrastructure resilience, and fostering community engagement in climate adaptation efforts. By integrating these insights into the policymaking process, Malaysia and Indonesia can enhance their capacity to address climate-related challenges in real estate development.

4.0 Findings and Discussion

4.1 Sustainable Building Practices and Materials

Climate-resilient real estate requires sustainable building materials. Climate-resistant materials protect buildings from moisture, heat, and wind. Green roofs, permeable pavements, and energy-efficient windows increase property resilience (UNECE, 2017). Solar panels, LED lighting, and smart thermostats reduce a building's carbon footprint and improve climate resilience. Energy-efficient buildings can withstand extreme temperatures and power outages, attracting investors and renters (Kok, McGraw, & Quigley, 2012). Climate resilience requires flood control owing to increasing sea levels and extreme weather. Building levees, floodwalls, and stormwater management systems prevent water damage (Nicholls et al., 2018). Strategic zoning and land use planning may also create climate resilience. Communities can safeguard real estate from climate-related risks by limiting expansion in floodplains and coastal zones and promoting it elsewhere (Berke, Song, & Stevens, 2017).

4.2 Government Policies and Financial Incentives

Government building laws and standards that mandate resilient construction are essential to climate resilience. Baker (2018) states these rules make new projects climate-resistant to extreme winds, flooding, and earthquakes. Developers may use tax credits, grants, and subsidies to add climate resiliency. These incentives make resilient buildings cheaper for developers (Hino, 2018). Climate resilience investments benefit real estate. Weatherproof homes have higher market values, fewer operational costs, and lower insurance rates. Keenan et al. (2018) found that flood resilience measures lowered flood insurance premiums and raised property values in flood-prone areas.

Institutional investors consider climate-resilient properties safer long-term investments. Due to risk awareness, investors choose climate-resilient investments. Real estate investors are willing to pay extra for climate-resilient assets (Keenan, Hill, & Gumber, 2018). Climate-resilient solutions have raised property prices in Malaysia and Indonesia, especially in urban and high-risk locations. Weatherproof homes like those certified by the Green Building Index (GBI) in Malaysia and the Green Building Council Indonesia (GBCI) are often valued more. Sustainable and resilient real estate is in demand due to climate change awareness and resilience's long-term economic benefits (Nawawi et al., 2017; Wardhani & Susilawati, 2020). Climate-resilient properties' higher values effect markets. Climate resilience-certified houses attract institutional investors as safer, greener investments. Global awareness of climate change will boost demand for climate-resilient dwellings, influencing Malaysia and Indonesia's real estate markets (Hino, 2018).

Due to climate-resilient legislation, both nations' investment decisions now favor sustainable projects. Financial incentives like tax refunds and grants have made climate-resilient assets more appealing to investors. The paper also notes finance issues, particularly in Indonesia, where green money is scarce. These financial barriers must be overcome to enhance investment in climate-resilient real estate and maximize policy benefits (Yap, 2017).

Although beneficial, climate resilience in real estate has drawbacks. The perceived cost of resilient architecture is a key concern. Despite long-term benefits, many developers avoid climate resilience owing to higher upfront expenditures. Many developers, investors, and property owners underestimate climate resilience (Levine, 2019). Uneven climate resilience requirements are another concern. Some locations have resilient construction and land use rules, whereas others don't. Market resilience differences can make certain assets sensitive to climate threats (Baker, 2018).

Government initiatives have fostered Southeast Asian real estate development, but execution is problematic. Consistent enforcement and federal-state cooperation must improve Malaysian GBI and LCCF regulations. Public education on sustainable real estate practices is essential (Nawawi et al., 2017). Indonesia's fragmented regulatory framework hinders policy implementation. Different local government commitments and capacities may impact regulatory enforcement and sustainable development. Complex legal and regulatory frameworks can deter developers and investors, especially in poor nations (Wardhani & Susilawati, 2020). Malaysia has achieved great strides in climate resilience for its real estate business. Property is among the industries with climate resilience strategies in the 2009 National Policy on Climate Change. This policy encourages sustainable building methods and materials using the Green Building Index (GBI) (Nawawi et al., 2017). Malaysia and the GBI created the Low Carbon Cities Framework (LCCF) to reduce carbon emissions and improve urban climate resilience. LCCF proposes energy-efficient structures, renewable energy, and flood management for sustainable urban development. These courses taught real estate developers about climate resilience and urged them to include it (Nawawi et al., 2017).

Climate change awareness and sustainable living are driving Southeast Asian demand for climate-resilient homes. Kuala Lumpur and Penang desire greener, climate-resilient housing. This buyer choice shift is driven by government incentives and energy-efficient house finance (Nawawi et al., 2017). Like Malaysia, Indonesia's sustainable infrastructure development prioritizes the incorporation of green building practices to boost climate resilience and drive economic progress. This strategy encompasses the adoption of energy-efficient designs, the use of sustainable materials, and the implementation of effective water management techniques. For example, Indonesian policies promote the establishment of green buildings that aim to lower energy consumption and greenhouse gas emissions while enhancing indoor air quality (Wiryomartono, 2015). Furthermore, organizations like the Green Building Council Indonesia advocate for the integration of sustainable practices within the real estate sector. This approach not only benefits the environment but also encourages community involvement and strengthens social bonds (International Finance Corporation, 2019). By incorporating green spaces and community amenities, these developments significantly enhance residents' quality of life and increase urban areas' resilience against climate-related challenges.

Malaysian GBI-certified homes cost extra. GBI-certified buildings in KL, Penang, and Johor Bahru are worth 10-15% more (Nawawi et al., 2017). GBI-certified buildings are safer investments since they can resist weather and flooding. In a market where climate change may rise, this perception is crucial (Hino, 2018). Energy and operational costs are lower in GBI buildings. Solar panels, efficient heating, ventilation and air-conditioning (HVAC), and superior insulation minimize electricity costs in these structures. GBI-certified properties rise in value as owners and tenants save money (Kok, McGraw, & Quigley, 2012). Malaysian investors and customers are greener nowadays, hence, GBI-certified buildings are more valuable due to this knowledge and the need for green assets (Yap, 2017).

In flood-prone coastal Malaysia, climate-resilient strategies impact property prices considerably. Flood defences, sturdy building materials, and climate adaption methods raise housing values here. A 20% value premium for climate-resilient homes in high-risk areas indicates a strong preference (Nawawi et al., 2017). Climate-resilient strategies effect property values differently in Indonesia due to its diversified terrain and economy. GBCI-certified Jakarta and Bali buildings are valued 8–12% more (Wardhani & Susilawati, 2020). The perceived lowered risk of climate-resilient assets, operating cost benefits, and increased market demand for sustainability support this premium in Malaysia. In less developed Indonesia, climate-resilient measures have had less impact on property values. Certain areas have underestimated and struggled to embrace climate-resilient approaches. Climate-resilient properties usually fetch 3–5% or no premium. Developing area property owners and buyers rarely understand climate resilience's benefits. Climate-resilient properties have lower premiums due to market ignorance (Kusumowidagdo, 2019). These places' economic constraints limit climate-resilient program property valuation implications. Slow-growing areas with low incomes may diminish demand for climate-resilient dwellings since customers and investors value affordability above sustainability (Wardhani & Susilawati, 2020). The inconsistent use of climate-resilient measures in Indonesia lowers property values. In areas where local governments are less committed to enforcing building and sustainability laws, value premiums are lower, and the market is slower to implement climate-resilient policies (Wardhani & Susilawati, 2020).

Malaysia and Indonesia need to execute real estate climate resilience legislation despite advancements. Poor construction code enforcement is a serious concern. Developers may ignore climate-resilient requirements due to cost or awareness. Different national policies and local implementation lead to uneven climate-resilient measures across areas (Sheng, Shamsudin, & Mohamed, 2010).

Other issues include developers' need for more climate-resilient building financial incentives. Malaysia and Indonesia provide tax rebates and incentives but seldom cover resilient building expenses. Thus, without commercial demand, many developers are reluctant to use climate-resilient approaches (Kok, McGraw, & Quigley, 2012). Climate resilience strategies may significantly impact property values. Weatherproof houses sell for more due to lesser risk and long-term savings. Keenan et al. (2018) found that flood resilience measures in flood-prone areas raised property values and lowered insurance costs. Malaysian and Indonesian properties with green building certification or climate resilience measures have been appreciated (Nawawi et al., 2017; Wardhani & Susilawati, 2020).

4.3 Market Dynamics and Investment Trends

Climate resilient policies impact real estate investment decisions. Investors choose climate-resilient houses for safety and sustainability. Under pressure to include Environment Social Governance (ESG) factors in their investing strategies, institutional investors show this

inclination (Hino, 2018). Malaysian states and regions regulate climate-resilient policies differently, making implementation problematic. The National Policy on Climate Change and the Low Carbon Cities Framework (LCCF) provide climate resilience, but uneven state and local implementation restricts its influence. In economically developed areas, climate-resilient building norms are enforced more strictly (Yap, 2017; Nawawi et al., 2017). The decentralised government structure in Indonesia worsens the issues. Not all municipal governments are committed to climate resilience. Real estate markets in Jakarta and Bali benefit more from climate-resilient policies due to inconsistent policy execution (Wardhani & Susilawati, 2020). In Indonesia, corruption and bureaucracy inhibit climate-resilient legislation. Local officials may approve climate-unresilient projects for bribery or other favours. Developer approval delays and policy implementation inequalities may result from complex and opaque rules (Wardhani & Susilawati, 2020).

Climate-resilient building costs are another issue. Many developers and property owners are reluctant to invest in climate resilience despite its long-term benefits due to greater upfront costs. Minimal financial incentives exist for smaller and undeveloped market developers (Nawawi et al., 2017). Climate resilience activities in Indonesia are hindered by public ignorance. Due to ignorance of its advantages and suspicion of its ROI, many property owners and developers in developing nations struggle to create climate-resilient buildings (Kusumowidagdo, 2019).

4.4 Challenges and Barriers to Implementation

Climate-resilient strategies significantly impact property valuations in flood- and earthquake-prone regions of Indonesia and Malaysia, with properties that incorporate features like higher foundations and reinforced structures being especially valued. However, the effectiveness of these strategies is often hindered by limitations in government policies regarding climate change adaptation, which may not fully support or incentivize such investments. This growing awareness of climate resilience can lead to property premiums of up to 15% in high-risk areas, yet the lack of comprehensive policy frameworks may restrict broader implementation (Rahadi, R. et. al, 2022; Lestari, Setyani Dwi/Leon, Farah Margaretha et. al., 2024).

Malaysian climate-resilient policies have moved investment decisions towards sustainable properties. Institutional investors use ESG. Investors are becoming more aware of climate change's financial risks, including property damage, higher insurance costs, and rental revenue loss. These homes are safer investments since they can resist extreme weather. They now draw stable, risk-averse institutional investors (Hino, 2018). Urban tenants and buyers in KL and Penang seek robust structures. Demand is rising as people learn about climate resilience's benefits—lower operating costs, improved safety, and environmental alignment. Investors seek climate-resilient properties because they attract high-quality renters and demand higher rents (Nawawi et al., 2017). Sustainability-focused developers receive grants, tax refunds, and subsidies. The GBI encourages green buildings, making climate-resilient assets more appealing to investors (Yap, 2017).

Climate-resilient policies affect Indonesian investment decisions, although the impact varies by region and investor. Malaysia is attracting Indonesian institutional investors due of its climate resilience. International investors, who must follow worldwide ESG regulations, favour sustainable properties. In Jakarta and Bali, where high-end commercial and residential structures are sought, investors would pay more for climate-resilient properties (Wardhani & Susilawati, 2020).

Local investors disagree on climate-resilient policies. Sustainable houses are growing increasingly popular in cities, but local investors still favour location, pricing, and capital appreciation. Local investors may pick climate-resilient assets when climate dangers rise and the government promotes sustainability (Kusumowidagdo, 2019). Indonesian sustainable development public-private partnerships (PPPs) increased whereby the government agencies, corporate developers, and international groups engage to increase real estate climate resilience. Climate-resilient infrastructure projects have received significant funding (Wardhani & Susilawati, 2020). These collaborations may aid sustainable and climate-resilient real estate by combining public and private strengths. PPPs for large-scale infrastructure, green development, and urban planning may strengthen communities and real estate markets (Hino, 2018).

4.5 Future Directions and Collaborative Efforts

Climate-resilient measures must be adopted nationwide to operate. Malaysia and Indonesia should support, train, and assist local governments in implementing national projects. Climate resilience understanding boosts market demand and standard compliance (Sheng et al., 2010). Climate change necessitates changing rules to reflect new hazards and facts. Current and successful climate-resilient programs require government reviews and modifications. Using the latest weather data, construction technology, and sustainable development best practices (Hino, 2018). Better enforcement of climate-resilient construction legislation is needed to accomplish compliance and policy goals. Both nations should train and equip local governments to enforce laws. Enforcement and adoption can be improved by stricter penalties for non-compliance and climate-resilient norm incentives (Nawawi et al., 2017).

Fixing Malaysia and Indonesia's regulatory challenges requires government collaboration. Malaysian state and federal governments must work together to create climate-resilient policies. Decentralization has generated regional variances in Indonesia; the national government should collaborate with local authorities to unify legislation and enforce them (Wardhani & Susilawati, 2020). Climate-resilient real estate policy requires regional collaboration. Malaysia and Indonesia may share best practices, coordinate regional policies, and pool resources to combat climate change. ASEAN's sustainable urban development and climate resilience frameworks can aid collaboration (ASEAN, 2016). Next, increasing financial incentives for developers and property owners to invest in climate resilience is crucial. Government tax incentives, subsidies, and low-interest loans may lower climate-resilient building costs. Green finance from private banks can assist develop sustainable and resilient houses (Kok, McGraw, & Quigley, 2012). Apart from that, innovation and technology will drive climate-resilient real estate. Advanced construction methods, sustainable materials, and smart infrastructure systems may boost building resilience and decrease environmental impact. Government subsidies, industry partnerships, and R&D will

improve climate-resilient real estate (Nawawi et al., 2017). In the Kingdom of Saudi Arabia there is an initiative to incorporate ESG principles to green across all sectors, attract investments, and support its long-term development goals, particularly in achieving the vision of 2030. As for the listed companies that are involved in the real estate business, the ESG reporting is made compulsory to be submitted to the relevant authorities; for instance the Saudi Exchange (Tadawul) and Saudi Arabian Monetary Authority (SAMA).(Saudi Exchange, 2021)

5.0 Conclusion

To conclude, climate change poses a significant threat to the real estate market, especially in Malaysia and Indonesia, due to their expansive coastlines, large populations, and agricultural and coastal industries. To mitigate these risks, both countries have implemented climate-resilient real estate laws, promoting green building, tighter rules, and sustainable urban planning. However, the success of these policies depends on policy enforcement, market knowledge, and climate-resilient features. Malaysia's GBI supports sustainable development through green grading, while Indonesia's GBCI and CRAS support sustainable real estate development. However, regional disparities in policy enforcement, public education on real estate climate resilience, and inconsistent regulatory enforcement in Indonesia hamper the implementation of these measures. Climate-resilient real estate requires sustainable building materials, such as green roofs, permeable pavements, and energy-efficient windows, to protect buildings from extreme weather, sea-level rise, and temperature variations. Government building laws and standards that mandate resilient construction are essential to climate resilience, benefiting real estate by raising property prices, fewer operational costs, and lower insurance rates. To address regulatory challenges, Malaysia and Indonesia should support, train, and assist local governments in implementing national projects, adopt climate-resilient measures nationwide, and collaborate on regional policies and regulations. Apart from that, increased financial incentives for developers and property owners to invest in climate resilience are also crucial.

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Paper Contribution to Related Field of Study

This study generates a new finding relating the issue of climate change which poses significant threats to real estate, pushing governments to adopt climate resilience strategies. Malaysia and Indonesia demonstrate that climate resilience rules encourage sustainable real estate whereby climate resilience laws in Malaysia and Indonesia value green-certified and climate-resilient structures highly. The study found that the market responses to climate resilience laws have increased demand for green-certified and climate-resilient buildings.

References

Abidin, H. Z. (2021). Impacts, Prevention, Mitigation, and Adaptation of Land Subsidence in Java's Northern Coastal Areas. 10.13140/RG.2.2.23164.46721.

Akeampong, A., & Addae-Dapaah, K. (2021). Climate Change and Real Estate Investment in Southeast Asia. *Journal of Real Estate Literature*, 29(1), 45-67.

ASEAN. (2016). *ASEAN Framework on Sustainable Urbanisation*. Association of Southeast Asian Nations.
Baker, S. (2018). Building Codes and Climate Resilience: Policy Implications for the Real Estate Industry. *Environmental Policy Review*, 22(2), 250-269.

Berke, P., Song, Y., & Stevens, M. (2017). Integrating Hazard Mitigation into Zoning: A New Approach to Resilient Land Use PIanning. *Journal of Planning Education and Research*, 37(1), 56-71.

Harwood, T. G., & Garry, T. (2003). An overview of content analysis. *The marketing review*, vol.3(4), pp.479-498.

Hedrick-Wong, Y., & Angelopulo, G. (2017). Sustainable Real Estate Development in Asia. *Asian Real Estate Journal*, 24(2), 101-118.

Hezri, A.A. and Nordin Hasan, M. (2006), Towards sustainable development? The evolution of environmental policy in Malaysia. *Natural Resources Forum*, 30: 37-50. https://doi.org/10.1111/j.1477-8947.2006.00156.x.

International Finance Corporation (IFC). (2019). Green buildings profitable in long run, IFC and GBC Indonesia study says. Retrieved from IDN Financials; https://www.idnfinancials.com/archive/news/23059/Green-buildings-profitable-in-long-run-IFC-and-GBC-Indonesia-study-says

IPCC. (2014). *Climate Change 2014: Impacts, Adaptation, and Vulnerability*. Intergovernmental Panel on Climate Change.

Keenan, J. M., Hill, T., & Gumber, A. (2018). Climate Gentrification: From Theory to Empiricism in Miami-Dade County, Florida. *Environmental Research Letters*, 13(5), 540-563.

Kok, N., McGraw, M., & Quigley, J. M. (2012). The Diffusion of Energy Efficiency in Building. *American Economic Review*, 102(3), 1-7.

Kusumowidagdo, A. (2019). The Implementation of Green Building Concept in Indonesia: Challenges and Opportunities. *Journal of Environmental Planning and Management*, 62(6), 1045-1063.

Lestari, Setyani Dwi/Leon, Farah Margaretha et. al. (2024). Comparison and implementation of environmental law policies in handling climate change in ASEAN countrie : a comparative study of Indonesia, Malaysia, and Thailand. International Journal of Energy Economics and Policy, Vol.14 (2), S. 687 - 700.

Levine, S. (2019). Barriers to Climate Resilience in Real Estate: Perspectives from Industry Stakeholders. *Journal of Environmental Economics and Policy*, 8(2), 178-195.

Nawawi, A. H., Yusoff, N. N., & Hassan, A. (2017). Green Building Initiatives and Sustainable Real Estate Development in Malaysia. *Journal of Sustainable Real Estate*, 9(1), 112-128.

Nicholls, R. J., Hinkel, J., Lincke, D., & Van Der Pol, T. (2018). Global Investment Costs for Coastal Defense Through the 21st Century. *Nature Communications*, 9(1), 236-245.

OECD. (2021). *Real estate finance and climate transition: Market practices, challenges, and policy considerations*. Organisation for Economic Co-operation and Development. https://doi.org/10.1787/87654321-en

OECD. (2021). *Real estate finance and climate transition*. Paris: OECD Publishing.

Rahadi, R. et. al. (2022). Determining the factors influencing residential property price: A comparative study between Indonesia and Malaysia. *Decision Science Letters*, 11(4), 485-496

Sheng, Y. K., Shamsudin, M. N., & Mohamed, Z. (2010). Food Security in Malaysia: Issues and Challenges. *International Journal of Public Administration*, 33(8-9), 486-495.

UNECE. (2017). *Climate Change and Sustainable Real Estate Development*. United Nations Economic Commission for Europe.

UNEP FI. (2022). *Sectoral risk briefings: Climate risks in the real estate sector*. United Nations Environment Programme Finance Initiative. Retrieved from https://www.unepfi.org/publications

UNEP. (2014). *The Financial Sustainability of Climate Resilient Real Estate*. United Nations Environment Programme.

van Niekerk, A. J. (2020). Inclusive economic sustainability: SDGs and global inequality. *Sustainability*, vol. 12(13), 5427.

Wardhani, V., & Susilawati, C. (2020). Real Estate Market Responses to Climate Resilience Policies in Indonesia. *Journal of Southeast Asian Real Estate*, 15(4), 299-315.

Wiryomartono, B. (2015). 'Green building' and sustainable development policy in Indonesia since 2004. *International Journal of Sustainable Building Technology and Urban Development*, *6*(2), 82–89.

Yap, J. (2017). The Challenges of Foreign Real Estate Investment in Malaysia. *Asian Real Estate Journal*, 24(2), 101-118.