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

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Abstract 10AN

Countries must regulate real estate markets as global warming increases the frequency and severity of such disasters. Malaysia's National Policy on Climate Change (2009), Green Building Index (GBI), and National Urbanisation Policy (2016-2025) address real estate climate resilience, and National Action Plan on Climate Change (RAN-PI), Green Building Council Indonesia (GBCI), and Disaster Management Law (2007) in Indonesia. Therefore, the study will analyse Malaysia and Indonesia's climate resilience policies and their real estate market response through the qualitative method. The study found that both countries' property values have risen due to the market's focus on sustainability and durability. (

Keywords: Climate Resilience; Real Estate; Market Response

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1.0 Introduction

Modern real estate is challenged by climate change whereby more frequent and destructive floods, hurricanes, and rising sea levels threaten the delicate real estate market. Malaysia and Indonesia are vulnerable to climate change due to their long coasts, big populations, and agricultural and coastal industries (Akeampong & Addae-Dapaah, 2021).

separately. Malaysia and Indonesia have climate-resilient real estate laws to limit the risks. These policies promote green building, tighter rules, and sustainable urban planning. However, the restrictions impact on the real estate industry determines success. Developers, investors, and purchasers must focus on climate resilience and buy resilient assets. In fact, market behaviour is affected by policy enforcement, market knowledge, and climate-resilient features (Wardhani & Susilawati, 2020). On the other hand, success depends on policy-driven real estate market responsiveness. Builders, investors, and buyers must encourage climate resilience and buy resilient assets. These laws can alter market behaviour depending on enforcement, market knowledge, and climate-resilient feature

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value (Wardhani & Susilawati, 2020). 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 prioritise 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 urbanisation, 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 Climate Resilience and Adaptation Strategy (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. Due to economic and infrastructure inequalities, more developed countries need sustainability practices (Wardhani & Susilawati, 2020).

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 minimise 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 emphasises 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 decentralisation (Wardhani & Susilawati, 2020).

3.0 Findings and Discussion

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).

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 favour 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 maximise 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). Indonesia, like Malaysia, promotes sustainable development and climate resilience in real estate. CRAS strengthens Indonesian infrastructure and communities against climate change. This improves land use planning, construction codes, and green building materials (Wardhani & Susilawati, 2020). The GBI and LCCF encourage developers and investors to create green buildings and climate-resilient infrastructure in Malaysia. Indonesia's Climate Resilience and Adaptation Strategy (CRAS) has encouraged sustainable investment in high-risk locations including Jakarta and Bali (Nawawi et al., 2017; Wardhani & Susilawati, 2020). 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 HVAC, and superior insulation minimise 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. 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).

Climate resilience policies impact real estate investment decisions. Investors choose climate-resilient houses for safety and sustainability. Under pressure to include 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).

Despite limitations, climate-resilient strategies effect property valuations more in flood- and earthquake-prone Indonesia. These places value climate adaptation features including higher foundations, reinforced structures, and flood barriers. Climate resilience awareness is growing in high-risk areas. High-risk nations like Malaysia may pay 15% more for climate-resilient homes (Wardhani & Susilawati, 2020). 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).

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. Decentralisation 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).

4.0 Conclusion

To conclude, Climate change poses a significant threat to the real estate market, especially in Malaysia and Indonesia, due to their long coastlines, large populations, and agricultural and coastal industries. To mitigate these risks, these 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 Green Development Index (GBI) supports sustainable development through green grading, while Indonesia's Green Building Council (GBCI) and Climate Resilience and Adaptation Strategy (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 threatens 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.

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