

Building Resilient Futures: Adaptable Urban Real Estate in the Era of Climate-Conscious Investment

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ABSTRACT

The accelerating pace of urbanisation is transforming cities into engines of economic growth; however, it is also increasing exposure to climate-related hazards that threaten the viability and sustainability of real estate investments. Urban areas, as primary contributors to greenhouse gas emissions, are becoming increasingly vulnerable to extreme weather events, resource scarcity, and shifting societal needs. This evolving risk landscape underscores the urgent need for a new paradigm in real estate development that prioritises resilience and adaptability to safeguard assets, communities, and long-term investment value. This paper aims to identify and evaluate strategies for embedding resilience and adaptability within urban real estate, aligning with the conference theme of navigating growth, viability, and investment security. The study employs a qualitative review of recent academic literature, policy frameworks, and global best practices, with a focus on Malaysia's initiatives supporting Sustainable Development Goal 13 (SDG 13). The analysis synthesises insights from international resilience toolkits and case studies to uncover actionable interventions for the sector. Key findings highlight that integrating green infrastructure, energy-efficient design, sustainable transportation, and nature-based solutions not only reduces environmental impact but also enhances the marketability and value of real estate assets. The adoption of resilience-focused planning and adaptive models is increasingly driven by investor demand, regulatory shifts, and the proven financial benefits of risk reduction, such as improved access to capital, higher occupancy rates, and lower insurance premiums. Neighbourhood-scale resilience strategies, in particular, demonstrate significant potential to protect vulnerable communities, foster social equity, and ensure the stability of property values. In conclusion, embedding resilience and adaptability into urban real estate is essential for future-proofing cities against climate uncertainties and supporting harmonious, sustainable growth. By adopting a multidimensional approach, real estate stakeholders can transform risk into opportunity, positioning the sector as a leader in building thriving, climate-resilient urban environments that attract investment and enhance community well-being.

Keywords: Urban Resilience, Adaptable Real Estate, Climate Risk Mitigation, Sustainable Urban Development, Investment Viability

INTRODUCTION

The way that urban surroundings are changing so quickly is radically altering the course of world development. The number of people living in cities is expected to reach two-thirds of the world's population by 2050. Cities like Bangkok, Jakarta, and Kuala Lumpur are hubs for social innovation, economic growth, and cultural identity (United Nations, 2019; Asian Development Bank, 2022). However, in addition to these advantages, unrelenting urbanisation is exacerbating a number of vulnerabilities that directly jeopardise the sustainability and viability of real estate assets, such as heat islands, rising greenhouse gas emissions, and exposure to climatic extremes (UNEP, 2020).

The effects are evident in Malaysia and throughout Southeast Asia. Property values and investor confidence are being undermined by, for example, Bangkok's intensifying heat islands, Jakarta's continuous coastal risks and subsidence, and Kuala Lumpur's recurring flooding disasters (Department of Statistics Malaysia, 2022; McKinsey Global Institute, 2020). Due to its permanent nature and high capital requirements, real estate is

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especially vulnerable to climate hazards peculiar to a given area. The sector is facing enormous risks in a period of unexpected climatic instability, as evidenced by the devastating flooding that occurred in Malaysia in 2021 alone, which resulted in direct losses reaching RM6.1 billion (Department of Statistics Malaysia, 2022).

A new paradigm in real estate is evolving as a result of these interlocking constraints, one that is focused on adaptation and resilience. According to UN-Habitat (2017), urban resilience includes the capacity to adapt, recover, and flourish in the face of hardship, in addition to the capacity to endure shocks like floods, heat waves, and economic downturns. In this context, places that are built or modified for flexibility, environmental responsiveness, and future climate unknowns are referred to as adaptable real estate (Schmidt & Austin, 2016). Instances like KL Eco City demonstrate how elevated buildings, green roofs, and the use of long-lasting, low-carbon materials not only reduce risks but also provide long-term value (Ng & Tan, 2021; Mihalakakou et al., 2023).

Additionally crucial is the interplay between market signals and regulatory frameworks. In line with global sustainability objectives, Malaysia's Low Carbon Cities Framework encourages green practices and provides incentives for climate-adaptive initiatives (Malaysia's Low Carbon Cities Framework, n.d.; United Nations, 2015). Improved rental yields, higher occupancy rates, and easier access to financing are further benefits of resilient properties, which sustainability-focused investors are beginning to identify for their lower risk and higher long-term value (CBRE, 2022; Allianz Group, 2023). A multifaceted approach is therefore required to promote harmonious real estate expansion, encompassing sophisticated design, progressive legislation, social inclusion, and strong market processes.

LITERATURE REVIEW

Urbanisation across Southeast Asia has accelerated at an unprecedented rate, transforming the region's economic, social, and physical landscapes. Cities such as Kuala Lumpur, Jakarta, and Bangkok exemplify this transformation through their rapidly evolving skylines, expanding transportation networks, and dynamic business districts (United Nations, 2019). This urban growth has created substantial opportunities for property development, infrastructure improvement, and increased investment activity. However, it has also generated complex challenges that arise from the combined pressures of climate change, demographic shifts, and shifting investor expectations.

Climate-related risks are increasing in both frequency and severity across the region. Flooding in Malaysia, land subsidence and sea-level rise in Jakarta, and prolonged heatwaves in Bangkok are now common threats that undermine the stability and long-term market value of real estate assets. The 2021 floods in Malaysia caused damages estimated at RM6.1 billion, severely disrupting communities, economic activity, and investor confidence (Department of Statistics Malaysia, 2022). These environmental hazards also disproportionately affect vulnerable populations, which deepens existing socio-economic inequalities (Asian Development Bank, 2022).

In addition to environmental pressures, demographic change is reshaping the structure and needs of urban populations. Rapid population growth in cities, the expansion of the middle class, and the increasing proportion of elderly residents are creating new patterns of demand for housing, amenities, and public infrastructure (McKinsey Global Institute, 2020). The COVID-19 pandemic further influenced urban preferences, with greater emphasis now placed on healthier, greener, and better-connected environments.

Investor priorities have evolved as well. Institutional investors and development banks are focusing not only on immediate profitability but also on Environmental, Social, and Governance (ESG) performance benchmarks. Increasingly, they require proof that projects incorporate climate resilience, operational sustainability, and social value creation (Global Real Estate Sustainability Benchmark, 2021).

In this context, embedding resilience, defined as the capacity of urban systems to withstand, recover, and adapt to disruptive events, and adaptability, defined as the ability to anticipate and respond proactively to change, into real estate development is essential (UN-Habitat, 2017). This paper argues that these qualities are critical for achieving harmonious real estate that balances urban growth, economic sustainability, and social equity.

Drawing on regional case studies, policy reviews, and market data, it demonstrates how resilience-oriented strategies can safeguard assets, sustain investor confidence, and promote equitable, sustainable urban development across Southeast Asia.

The Imperative of Resilience and Adaptability in Urban Real Estate

The regional landscape of Southeast Asia presents a highly intricate tableau of environmental risks and rapidly evolving market dynamics, both of which have a profound and often unpredictable influence on the fortunes of urban real estate. Cities in the region are frequently at the forefront of climate and environmental vulnerability, with challenges varying by local geography and urban fabric. In Bangkok, rising urban heat islands have become increasingly severe over recent decades due to dense development, loss of natural surfaces, and soaring energy consumption, resulting in higher cooling costs, public health stresses, and periodic power shortages during peak periods (Ng & Tan, 2021). Jakarta's predicament is equally acute but distinct, featuring persistent coastal flooding driven by both rising sea levels and ongoing land subsidence, much of it exacerbated by groundwater extraction and unregulated development. Some districts in North Jakarta have sunk several meters over the past generation, putting billions of dollars' worth of commercial and residential assets at risk while threatening the displacement of tens of thousands of residents (Asian Development Bank, 2022). Meanwhile, Kuala Lumpur is increasingly susceptible to recurrent flash floods that disrupt transportation and commerce, threaten homes and businesses, and inflict costly damage on the physical infrastructure. The catastrophic floods of 2021, which inflicted approximately RM6.1 billion in direct losses, also led to substantial indirect impacts by disrupting essential urban systems, local economies, and social networks (Department of Statistics Malaysia, 2022).

These environmental hazards do more than cause short-term financial deprivation; they undermine long-term investor confidence and introduce volatility to what should be stable, appreciating markets. Repeated shocks erode trust in the resilience of physical infrastructure, making investors wary of long-term commitments and prompting capital flight toward more stable, lower-risk urban geographies. Developers may face increased insurance premiums, regulatory scrutiny, and delays, while asset owners experience declines in rental yields, occupancy, and asset revaluation, all of which threaten the viability of entire neighbourhoods or districts when left unaddressed. Such realities have prompted a re-examination of development models and risk management strategies across Southeast Asia.

In this context, resilience in real estate is increasingly understood as a fundamental necessity rather than a peripheral ideal. Resilience pertains to the built environment's capacity to absorb, withstand, and bounce back from disruptive phenomena such as floods, storms, and urban heatwaves. This involves not only robust engineering and design but also institutional readiness and community capacity to recover swiftly after adverse events. Adaptability, conversely, refers to the ability to anticipate changing demographic trends, economic fluctuations, and intensifying environmental risks, and to proactively adjust planning, operations, and asset management in response. Attributes like versatility of building use, flexible zoning, and the incorporation of nature-based solutions are emblematic of adaptability.

Particularly for lower-income and marginalised communities that often lack adequate infrastructure and financial safety nets, these qualities are far from optional—they are essential for safeguarding lives, livelihoods, and baseline urban sustainability. Empirical research has shown that climate vulnerability feeds into and worsens patterns of socio-economic marginalisation, creating vicious cycles that perpetuate inequality and urban blight (Kong et al., 2022; Asian Development Bank, 2022). These cycles can only be interrupted and ultimately reversed through intentional investment in resilient infrastructure, integrated urban planning, and adaptive governance. For Southeast Asian cities navigating a new era of uncertainty marked by climate unpredictability and global economic shifts, embedding resilience and adaptability into the DNA of urban real estate is emerging as a cornerstone principle for safeguarding value, incentivising responsible investment, and fostering equitable urban growth.

Economic and Social Returns from Resilient Urban Development

Investing in resilience and adaptability strategies has become fundamental to sustainable urban development,

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as the measurable benefits extend beyond traditional economic metrics to significantly influence social capital, quality of life, and long-term urban viability. When urban planners and developers integrate green and blue infrastructures such as bioswales, green roofs, and rain gardens, they are not only applying environmentally responsible design but also generating tangible financial and community rewards.

Bioswales, for instance, are vegetated channels designed to manage stormwater runoff, prevent flooding, and improve water quality. In Putrajaya, Malaysia, the installation of bioswales has demonstrated clear benefits: aside from providing critical flood mitigation, these systems have transformed underutilised spaces into vibrant public amenities that foster social interaction and community engagement. The property value premium of 3 per cent reflects the enhanced desirability and livability of such areas, showing that environmental interventions can complement market-driven incentives while advancing social cohesion (Ng & Tan, 2021; Mihalakakou et al., 2023).

Green roofs offer comparable advantages. In KL Eco City, green roofs reduce heat and mitigate localised flooding while providing accessible communal green spaces that increase biodiversity in dense city districts. Empirical findings show a 4.5 per cent increase in property values associated with these installations, which indicates both the environmental and amenity-driven appeal of projects that incorporate resilience measures.

Beyond green and blue infrastructure, advances in building technology are proving transformative. Modular construction methods in Southeast Asia allow for faster builds and adaptable layouts that suit shifting demographic and economic conditions. These innovations have produced property value premiums between 2 and 6 per cent alongside improved liveability and flexibility (Wong & Yap, 2019).

Internationally, Paris’s “15-minute city” exemplifies how integrated urban design based on the principle of proximity can yield property premiums up to 7 per cent while significantly improving access equity and reducing pollution (Asia Green Real Estate Index, 2022).

Table 1: Synthesis of Resilience and Adaptability Interventions in Urban Real Estate

Intervention Type	Risk Mitigation	Value Premium
Green roofs (KL Eco City)	Urban heat, flooding	4.5%
Bioswales (Putrajaya)	Flooding	3%
Modular construction	Flexibility	2–6%
15-minute city (Paris)	Pollution reduction	7%

Sources: Ng & Tan, 2021; Mihalakakou et al., 2023; Wong & Yap, 2019; Asian Development Bank, 2022.

A synthesis of these cases reveals that the most successful resilience-oriented interventions are those that deliver multiple co-benefits. Measures such as green roofs and bioswales provide not only environmental risk mitigation but also improvements in social well-being through the creation of accessible public spaces. These co-benefits strengthen asset value, attract investment, and promote inclusive, harmonious urban development.

Policy and Governance: Regulatory Foundations for Sustainable Urban Growth

Transforming resilience and adaptability from conceptual ideals into operational reality requires the presence of strong policy frameworks, coherent regulatory systems, and effective governance structures that can guide, incentivise, and enforce sustainable development practices. In Malaysia, the *Second National Urbanisation Policy* (NUP2) and the *Low Carbon Cities Framework* are significant milestones in this policy landscape. These frameworks incorporate incentives for sustainable design, mandate adherence to green building standards, and promote multi-stakeholder partnerships that encourage knowledge sharing and coordinated action between the public sector, private developers, non-governmental actors, and local communities. NUP2 provides strategic direction for balanced, sustainable urban growth, while the Low Carbon Cities Framework supports municipalities in integrating climate change mitigation and adaptation measures into their physical planning and infrastructure investment decisions. Importantly, such frameworks are not isolated national

strategies but are aligned with internationally recognised guidelines, including UN-Habitat's recommendations for urban resilience, which call for a combination of physical risk management, inclusive governance, and strong enforcement mechanisms to achieve long-term sustainability (Department of Town and Country Planning, Peninsular Malaysia, 2020; UN-Habitat, 2017).

The regulatory levers embedded in these frameworks play a critical role in bridging the gap between policy goals and on-the-ground implementation. Regulatory incentives, such as tax breaks, reduced development charges, and expedited permits for projects incorporating certified sustainable technologies and resource-efficient designs, encourage developers to prioritise resilience in their project planning and execution. Mandatory compliance requirements with green building codes, urban design guidelines, and environmental performance standards ensure that sustainability measures are not merely voluntary but a regulated baseline for all developments. Cross-sector collaboration mechanisms institutionalise cooperation among government agencies, private investors, architects, urban planners, and civil society organisations, thus fostering a more holistic approach to urban resilience. Finally, monitoring and enforcement mechanisms provide oversight through consistent evaluation, site inspections, and compliance audits, ensuring that sustainability objectives are not abandoned after initial project approval but are maintained throughout the life cycle of urban developments.

The benefits of such governance approaches extend beyond environmental protection. They include strengthening investor confidence through regulatory certainty and improving predictability in market performance. Investors are more likely to commit resources to projects in jurisdictions where clear policies and enforcement systems assure the durability and future value of assets. Evidence from both Malaysian cities and international examples consistently confirms that resilience-focused governance reduces disaster-related losses, enhances property values, and improves social equity in urban opportunity distribution.

In Malaysia, climate-resilient policies are beginning to shape market behaviour and implementation practices. Recent analysis found that sustainability-oriented regulation, green certification, and resilience planning improve market confidence and perceptions of long-term asset durability (Kader et al., 2024). Malaysian housing research also shows that green-certified properties can achieve price premiums, indicating that resilience and sustainability features are increasingly recognised in market transactions (International Journal of Housing Markets and Analysis, 2024).

The relationship between governance frameworks, regulatory levers, resilience-oriented actions, and the resulting environmental, economic, and social outcomes is illustrated in Figure 1 below.

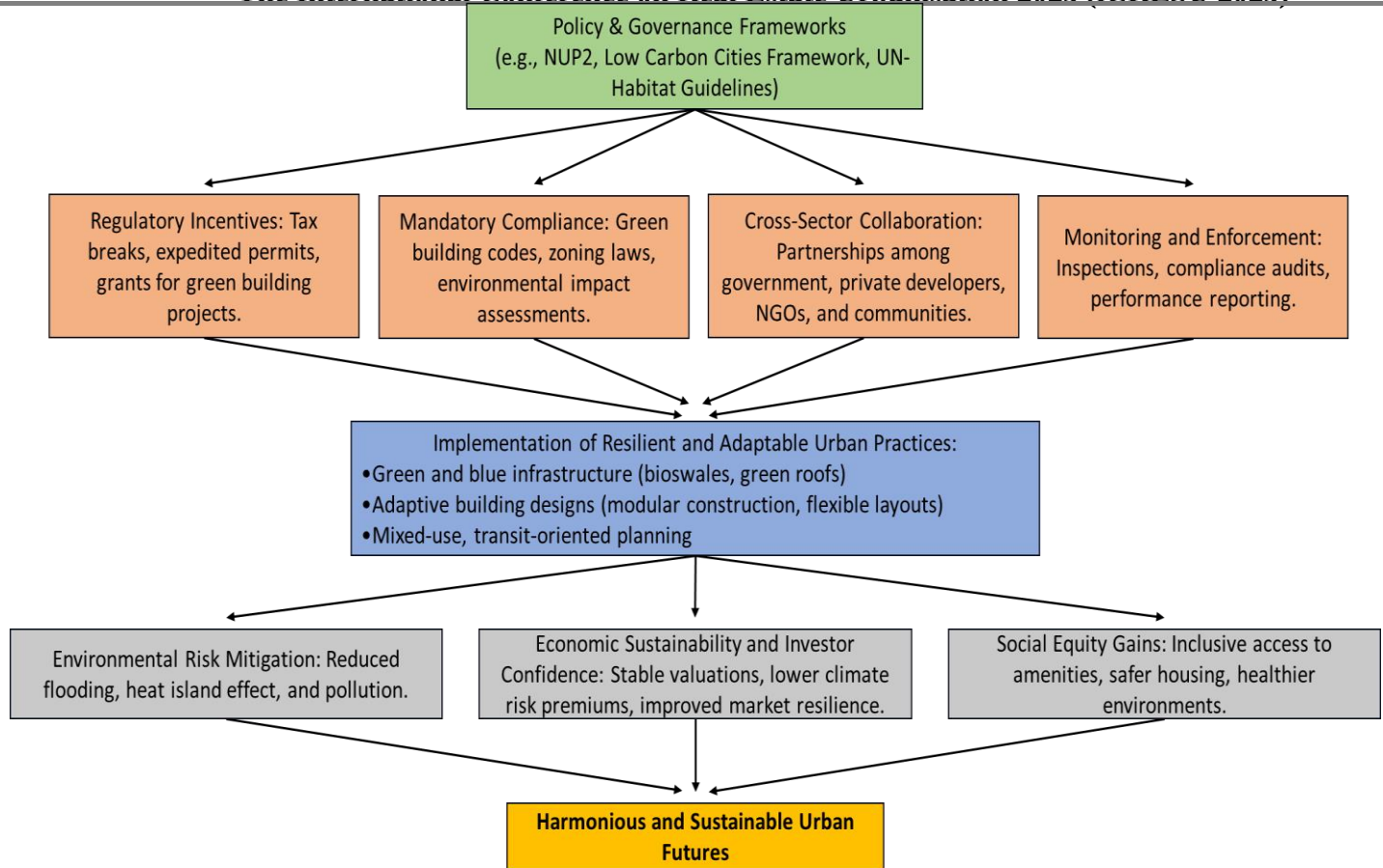


Figure 1. Interaction between policy and governance frameworks, regulatory levers, and resilience outcomes in urban real estate.

This mapping illustrates how overarching governance frameworks impact specific regulatory levers, which in turn facilitate the implementation of resilient and adaptable practices in urban real estate. These practices lead to co-beneficial outcomes across environmental, economic, and social domains, ultimately contributing to harmonious and sustainable urban futures.

METHODOLOGY

This study applies a mixed-methods research design to capture the multifaceted and interconnected nature of resilience and adaptability in urban real estate. The complexity of this research topic demands a methodological framework that accounts for measurable trends as well as the qualitative factors that influence market behaviour, policy implementation, and urban design choices. By integrating both quantitative and qualitative approaches, it has been possible to not only identify patterns but also to interpret the causal processes and contextual variables that underpin them. This approach ensures that conclusions are supported by robust numerical evidence while remaining grounded in the lived realities and policy contexts of the case study locations.

The research was implemented in three sequential and interconnected phases: a systematic literature and policy review, qualitative case studies with comparative analysis, and a quantitative trend analysis strengthened through triangulation with earlier findings. Each phase was designed to build upon the previous one so that the analysis evolved progressively from conceptual framing to empirical testing.

Systematic Literature and Policy Review

The first phase laid the conceptual foundation for the study. A systematic review of published academic research, industry white papers, government policy documents, and global sustainability reports was undertaken to identify existing strategies and gaps in resilience and adaptability within urban real estate. Key

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reference materials included Malaysia's *Second National Urbanisation Policy* (NUP2), the *Low Carbon Cities Framework*, and UN-Habitat's *Urban Resilience Guidelines*. International benchmarks such as the Asia Green Real Estate Index (2022) were reviewed to understand how investors and developers are increasingly considering climate resilience indicators in their decision-making.

The review process involved thematic coding to extract recurring concepts such as regulatory incentives, required compliance with green building codes, mechanisms for cross-sector collaboration, and monitoring and enforcement practices. Attention was given to both domestic and global sources in order to identify transferable practices while recognising the need for context-specific solutions in Southeast Asia. This phase also clarified definitions of resilience and adaptability and linked them explicitly to market performance, environmental sustainability, and social equity outcomes.

Qualitative Case Studies and Comparative Analysis

Building on the conceptual groundwork, the second phase sought to illustrate how resilience and adaptability strategies operate in practice. A comparative case study method was used to explore contexts with varying environmental challenges and governance structures. Within the Southeast Asian region, Kuala Lumpur and Putrajaya in Malaysia, Bangkok in Thailand, and Jakarta in Indonesia were selected. Paris, France, was included as an international comparator due to its globally recognised 15-minute city model.

Data sources for these case studies included post-disaster reconstruction reports, municipal planning documents, environmental impact assessments, site observations, and semi-structured interviews with key stakeholders such as urban planners, developers, government officials, and community leaders. Interview questions were designed to elicit perspectives on both the technical aspects of resilience measures and their social and economic impacts. Interventions were evaluated on three main criteria: financial performance (for example, property value premiums and operating cost reductions), environmental risk mitigation (such as reduced flood vulnerability or urban heat effects), and social equity enhancements (for example, improved access to amenities and services for underserved populations).

The comparative analysis highlighted that while local conditions influence implementation, the fundamental logic behind effective resilience strategies is consistent across contexts: environmental risk reduction tends to yield both economic and social dividends when planned and managed inclusively.

Quantitative Analysis and Triangulation

The third phase focused on statistical analysis of the relationship between environmental shocks and real estate market performance. Annual flood loss data from the Department of Statistics Malaysia for the period 2015 to 2022 were compiled alongside a scaled property value index derived from national property valuation reports. This index allowed for clear year-to-year comparisons in market performance relative to environmental loss figures.

Table 2 presents these results, showing that years with the most severe flood losses consistently aligned with declines in property value indices. The clearest example of this pattern appears in 2021, where RM6.1 billion in flood-related damages coincided with the lowest property value index score in the dataset, at 85. A reversal of this trend occurred in 2022, with a partial recovery in the property value index to 89. This improvement aligned with the introduction of more targeted adaptation measures in urban centres such as Kuala Lumpur and Putrajaya.

Table 2: Flood Impacts vs Property Value Trends in Malaysia (2015–2022)

Year	Flood Losses (RM Billion)	Property Value Index (Scaled)
2015	0.8	100
2016	1.2	98
2017	1.5	97
2018	2.0	95

2019	2.8	93
2020	5.0	88
2021	6.1	85
2022	4.5	89

Sources: Department of Statistics Malaysia, 2022, for flood losses; valuation data from related Malaysian annual property reports or relevant surveys.

A corresponding visual representation, Figure 2, illustrates these trends graphically, underscoring the inverse correlation between environmental losses and property valuation performance. It also supports the interpretation that targeted resilience investments can help stabilise markets following severe environmental events.



Figure 2: Flood Impacts vs Property Value Trends in Malaysia (2015–2022)

Triangulation of results across all three phases ensured that the patterns observed in the quantitative data were contextualised by insights from the literature review and qualitative case analyses. This integration of evidence reduced the risk of over-reliance on a single data type and strengthened the validity of the study’s conclusions.

The harmonisation of urban growth, economic viability, and investor confidence in Southeast Asia depends fundamentally on the operationalisation of resilience and adaptability. This study’s integrated methodology confirms that targeted interventions not only protect cities against shocks but also generate measurable financial returns and foster more inclusive, robust urban communities. As Southeast Asian cities continue to expand and integrate global best practices, a relentless focus on resilient and adaptable urban real estate will be crucial for ensuring sustainable and equitable urban futures.

To strengthen the quantitative dimension, this study also draws on prior Malaysian property research as secondary empirical support. Studies on flood-prone residential areas in Malaysia indicate that repeated flood exposure reduces property values, whereas effective flood mitigation supports stronger market stability (Razali & Abdul Maulud, 2023; Ismail et al., 2019). Evidence from green-certified residential developments likewise

suggests that sustainability attributes can generate measurable price premiums (International Journal of Housing Markets and Analysis, 2024).

Rationale for the Mixed-Methods Design

Employing a mixed-methods approach was a deliberate choice based on the recognition that resilience and adaptability in urban real estate cannot be fully understood through numbers alone. Quantitative analyses provide measurable evidence of trends and correlations but often lack the depth needed to explain why such patterns exist and under what conditions they persist. Qualitative methods address this gap by exploring the underlying processes, decision-making structures, and social contexts that shape resilience implementation. In turn, policy and governance reviews link these insights to strategic levers available to governments and industry actors.

Ultimately, this integrated methodology was designed to produce conclusions that are both empirically reliable and practically actionable. By systematically linking global policy frameworks, localised case evidence, and long-term market data, the research offers a nuanced assessment of how Southeast Asian cities can embed resilience and adaptability into urban real estate planning, investment, and governance as central drivers of sustainable urban futures.

DISCUSSION

The results of this study strongly reaffirm that the integration of resilience and adaptability into urban real estate serves as both a protective strategy against environmental instability and a powerful accelerator of sustainable economic and social value creation. Across Southeast Asia and other rapidly urbanising regions, real estate markets are increasingly shaped by the realities of changing climates, demographic transitions, and economic uncertainty. Through comprehensive analysis, this research makes it clear that urban development models dependent solely on conventional methods or prioritising short-term returns are inadequate for building long-term stability or investment confidence.

A range of evidence from various case studies points to the effectiveness of interventions across multiple scales, from modular and flexible construction methods to transformative planning approaches such as the “15-minute city” model. Modular construction in Singapore and Kuala Lumpur allows for swift adaptation of real estate assets, ensuring they can be repaired, upgraded, or repurposed as tenant needs or environmental stressors change over time (Wong & Yap, 2019; Toivonen et al., 2024). Such adaptability extends the usable life of buildings, reduces the frequency of obsolescence, and supports a more circular approach to resource consumption. Planning strategies, especially the 15-minute city tested in Paris and Barcelona, promote resilient, mixed-use neighbourhoods where work, amenities, and recreation are within a brief walk or bike ride (Asian Development Bank, 2022). This leads to lower transportation emissions, stronger local economies, and a better quality of life for all urban dwellers.

Financially, these resilience strategies have a significant market impact. The Asia Green Real Estate Index (2022) finds that resilient properties outpace standard projects, showing an annual value premium of 6.5 per cent attributed to reduced exposure to risk, favourable insurance terms, and greater tenant retention. Proactive public policy, like Malaysia’s incentives for green retrofits and bonuses for sustainable developments, intensifies investment where it is most climate-urgent (Department of Town and Country Planning, Peninsular Malaysia, 2020).

A balanced view is also necessary because resilience measures can increase short-term capital costs through certification, higher-performance materials, and additional technologies. However, these costs may be offset over time through lower operating expenses, stronger tenant demand, better asset liquidity, and lower exposure to climate-related losses (CBRE Investment Management, 2025). In climate-vulnerable markets, the long-term cost of inaction may therefore exceed the upfront cost of adaptation.

Crucially, the research finds that resilience is not only an engineering or financial question but also an issue of social inclusion and equity. Interventions such as bioswales and rain gardens in Putrajaya demonstrate that

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well-designed green infrastructure can combine environmental protection with public space creation, resulting in cityscapes that are healthier, more attractive, and more equitable (Ibrahim & Hassan, 2021). Participatory planning, where local communities are engaged in establishing priorities, produces infrastructure better tailored to residents' needs and more likely to achieve lasting value and social legitimacy. In sum, the study suggests that the most effective resilience strategies are those enacted through multi-disciplinary, multi-stakeholder collaboration.

To synthesise these complex interactions, the conceptual framework in Figure 3 offers a visual summary showing how four critical domains, policy (design, finance, and community engagement), intersect to underpin resilient and adaptable urban real estate.

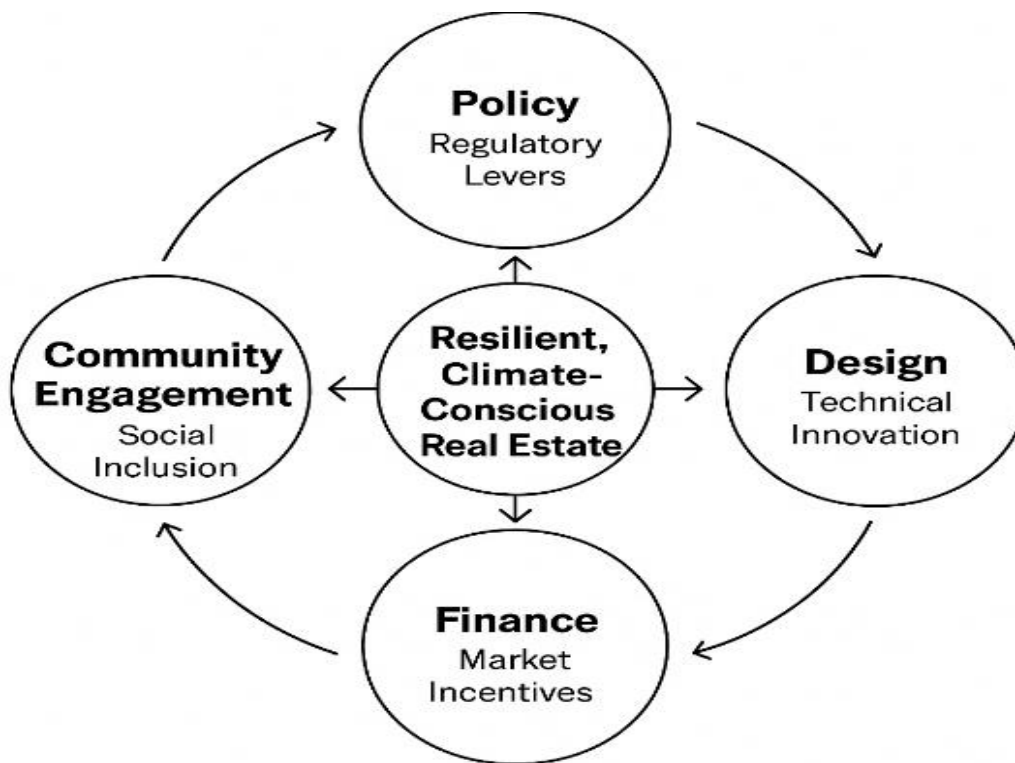


Figure 3: Conceptual Framework - Intersections of Policy, Design, Finance, and Community Engagement in Resilient Real Estate

This framework illustrates that successful resilience is not driven by a single domain acting in isolation. Instead, it is the result of continuous feedback and cooperation among policy-makers (who establish mandates and provide incentives), design professionals (who convert resilience principles into tangible assets), the financial sector (which influences what gets built through risk pricing and investment flows), and local communities (which anchor and inform the real value of urban infrastructure). By working together, these actors create conditions that not only reduce risk but also enhance value and equity across urban systems.

CONCLUSION

This study confirms that resilience and adaptability are fundamental to the long-term viability, competitiveness, and sustainability of urban real estate in Southeast Asia. Evidence from empirical data and case studies shows that these qualities deliver benefits across environmental risk reduction, economic stability, and social equity. They are not only protective responses to climate change but also proactive strategies for securing market advantages and enhancing community wellbeing.

Integrating measures such as green roofs, bioswales, modular construction, and planning models like the "15-minute city" can enhance property value, lower climate risk, and improve liveability. When supported by policy incentives, as in Malaysia's Second National Urbanisation Policy and Low Carbon Cities Framework,

such interventions deliver measurable returns for both public and private stakeholders. However, their success depends on consistent enforcement, transparent monitoring, and strong political commitment.

The findings also highlight the social dimension of resilience. Inclusive planning processes that engage communities from the outset lead to solutions that better meet local needs, particularly for vulnerable groups. This ensures that climate adaptation benefits are broadly distributed rather than concentrated in wealthier districts.

To operationalise these approaches, governments should expand incentives and harmonise sustainability codes, the private sector should embed resilience assessments and risk disclosures into core practice, and financial institutions should prioritise funding for projects meeting resilience benchmarks. Strengthening local government capacity and using data-driven risk modelling will further support adoption.

The conceptual framework presented in Figure 3 illustrates how policy, design, finance, and community engagement must work together in a systems-based approach. Coordinated action across these domains is essential, as isolated efforts cannot address the complexity of climate resilience challenges.

In Malaysia, policy progress should now be matched by more systematic monitoring of implementation outcomes. Although the Second National Urbanisation Policy and the Low Carbon Cities Framework provide a strong foundation, recent evaluation shows that policy effectiveness still depends on local institutional capacity, inter-agency coordination, and consistent enforcement (Abd Wahid & Sakdan, 2024). Stronger evidence on how resilience measures affect property performance and risk reduction across Malaysian cities would further improve policy and investment decisions.

Looking ahead, longitudinal studies are needed to measure both the avoided losses and wider co-benefits of resilience investments, alongside deeper collaboration among Southeast Asian cities and global partners. Aligning governance, design, finance, and community priorities offers a direct path to vibrant, sustainable, and inclusive cities, positioning the region's real estate sector to thrive despite environmental and socio-economic uncertainties.

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We also wish to acknowledge the Asia Green Real Estate Index team for their valuable market data contributions, and to the officials, developers, and community representatives in Kuala Lumpur, Putrajaya, Bangkok, and Jakarta who participated in interviews and shared field experiences during the qualitative phase. Their practical insights have greatly enriched the context and applicability of this study's findings.

Finally, special thanks are due to our research colleagues and reviewers whose constructive feedback has shaped the methodological and analytical rigour of this conference paper.

Paper Contribution for the Related Field of Studies

This research advances both scholarly understanding and practical application in the field of resilient and adaptable urban real estate, directly aligning with the conference theme "*Evolution of Harmonious Real Estate: Navigating Growth, Viability, and Investment Sustainability*." It contributes novel empirical evidence by correlating climate risk with market performance, using a combined analysis of flood loss datasets and property value indices (Table 2 and Figure 1) to show how environmental hazards directly influence asset valuations. Such quantifiable linkage between climate-related disruptions and financial outcomes remains relatively underexplored within Southeast Asian urban studies, offering a solid evidence base for more informed policy and investment strategies.

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Methodologically, the paper adopts a comparative case study approach spanning cities in Malaysia, Thailand, Indonesia, and France, demonstrating that while resilience strategies must be context-specific, they can consistently deliver resilience dividends in varied cultural, economic, and environmental settings. The proposed conceptual framework integrates policy, design, finance, and social equity into a mutually reinforcing model, bridging disciplinary and sectoral gaps while illustrating how regulatory incentives, innovative urban design, and inclusive governance can be operationalised cohesively. This integrative perspective not only enriches the academic discourse on climate-conscious urban real estate but also delivers actionable insights for practitioners, policy-makers, and investors. It provides a clear pathway for embedding resilience and adaptability into standard project appraisal, development, and management processes.

Finally, by evidencing that resilience is both an environmental imperative and a driver of long-term financial performance and social inclusion, the study advances the global conversation on redefining real estate value in the climate change era. It underscores the potential for Southeast Asia to lead in implementing adaptive, sustainable urban development models that reconcile growth objectives with ecological and community well-being.

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