

RISK-INFORMED DEVELOPMENT IN URBAN PLANNING

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ABSTRACT

In the face of escalating climate change and rapid urbanization, cities worldwide are becoming more exposed and vulnerable to disasters. In response, urban planners are increasingly recognizing the importance of risk-informed development and their responsibility to work collaboratively with communities to achieve resilient and sustainable urban futures. This growing awareness has been strongly influenced by the Sendai Framework for Disaster Risk Reduction, which advocates for the integration of disaster risk considerations into all aspects of development. To examine the practical application of risk-informed development, this paper reviews Malaysia's urban landscape, focusing on the integration of risk governance and policy frameworks aimed at enhancing urban resilience and sustainability.

KEY WORDS

Risk-informed development, sustainable urban planning

1. INTRODUCTION

In an era of escalating climate change and rapid urbanization, cities are becoming increasingly vulnerable to a wide range of disasters¹⁻². This growing exposure underscores the need for risk-informed development in urban planning to ensure resilient and sustainable urban futures³. Risk-informed development emphasizes the integration of disaster risk reduction (DRR) elements into planning processes, enabling cities to proactively manage hazards, reduce vulnerabilities, and enhance their capacity to recover from disasters⁴. Urban planners play a pivotal role in this process, incorporating DRR strategies such as hazard assessments, risk mapping, and resilient infrastructure design into their development frameworks⁵. Global initiatives like the Sendai Framework for Disaster Risk Reduction (SFDRR) have further reinforced this approach by advocating for risk-sensitive land use planning, multi-level governance, and community engagement⁶. In Malaysia, these principles have been operationalized through the review of local plans to include DRR elements and the development of national guidelines aimed at integrating risk management into urban policies.

2. METHODOLOGY

2.1 Policies Review

The policy review was conducted through a structured content analysis of key national, regional, local and international policy documents related to urban planning and disaster risk reduction. This included a systematic examination

of existing urban development policies, guidelines, and frameworks, such as the Sendai Framework for Disaster Risk Reduction, the Sustainable Development Goals (SDGs), and local urban planning regulations. The review focused on identifying policy provisions that directly or indirectly address risk-informed development, including land-use planning, hazard assessments, and community resilience.

2.2 Stakeholder Consultations

Stakeholder consultations were conducted with urban planners, policymakers, and disaster management experts to gain insights into the practical challenges and opportunities in implementing risk-informed policies at the local level. The findings from the policy review were then synthesized to improve policy coherence and integration of risk-informed approaches in urban planning.

3. RESULTS AND DISCUSSION

3.1 Urban Planning System in Malaysia

Spatial development policies in Malaysia are primarily guided by the National Physical Plan (NPP), with the current 4th NPP (2021-2025) serving as the overarching framework. This is further supported by State Structure Plans, District Local Plans, and Special Area Plans. Under Act 172, the National Physical Planning Council (NPPC) functions as a multi-level governance mechanism responsible for updating, disseminating, and translating national policies into local actions. In Peninsular Malaysia, PLANMalaysia, the principal government agency for town and country planning, works in collaboration with various technical agencies to develop and implement a range of policy documents, from strategic to operational levels.

In addition to the four development plans, Development Proposal Report (DPR) is submitted by certified urban planners on behalf of landowners or developers to the local planning authority as part of the process to obtain planning permission for site development. This document serves as a critical tool in guiding site-specific decisions and ensuring that proposed developments align with broader planning objectives and regulatory requirements.

3.2 Integration of Risk-informed Development

The first major step into localizing risk-informed development were made following major flood events at Cameron Highlands in 2013 and 2014. The incident prompted the urgent need to revise local plans to include disaster risk management components and to promote resilience thinking

among stakeholders. Since then, a total of 24 local plans have been revised to incorporate seven categories of disasters, five types of disaster risk assessment maps, and associated mitigation measures.

In support of disaster risk reduction (DRR) efforts, the Disaster Resilient Cities Guideline was developed to provide a comprehensive framework for formulating policies, risk governance, and control measures aimed at enhancing the resilience, safety, and sustainability of cities and communities. Furthermore, to strengthen the integration of DRR into development planning, the National Guideline on Sustainable Risk Management of Geo-Disasters for Local Plans was officially released in 2022. This guideline incorporates all four priorities for action outlined in the Sendai Framework for Disaster Risk Reduction (SFDRR) into local planning processes. A key focus of this guideline is the promotion of Community-Based Disaster Risk Management (CBDRM), advocating for an all-of-society approach to the development and implementation of local plans.

The mainstreaming of DRR is also being integrated into emerging responsive sectors. The recently completed National Food Security and Risk-Informed Land Use Planning Study concluded that 62% of Malaysia's food sources are at risk and require immediate DRR interventions. Similar research has been conducted in coastal and highland areas, such as the National Coastal Zone Physical Plan 2 and the Regional Highland Development Plan, both of which have contributed to the development of evidence-based policies. These strategic documents aim to identify disaster-related challenges within specific sectors, address existing gaps, and provide strategies and action plans for DRR and post-disaster recovery to strengthen sectoral resilience.

3.3 Challenges of Integrating Risk-informed Development

Integrating risk-informed development into urban planning presents several significant challenges. One of the primary obstacles is the availability and quality of data needed for accurate risk assessments, particularly in rapidly urbanizing regions where hazard data may be incomplete or outdated. Additionally, there is often a lack of institutional capacity and technical expertise among local planning authorities to effectively incorporate disaster risk reduction (DRR) elements into development plans. Fragmented governance structures can further complicate coordination between different sectors and levels of government, leading to gaps in policy implementation. Financial constraints also hinder the adoption of risk-informed practices, as many municipalities lack the necessary funding to invest in resilient infrastructure and long-term DRR strategies. Furthermore, ensuring community engagement in risk-informed development is challenging, particularly in vulnerable or informal settlements, where there may be limited awareness or resources to participate in decision-making processes. These challenges underscore the need for enhanced

capacity-building, cross-sectoral collaboration, and sustained financial support to effectively integrate risk-informed development into urban planning.

4. CONCLUSION

Risk informed development is necessary to ensure that development initiatives are sustainable and resilient, minimize the impacts of hazards and disasters, and protect people, infrastructure, and the environment. In the following decade, cities need evidence-based strategies to guide disaster risk reduction efforts. Intergovernmental bodies can engage relevant ministries and stakeholders, convening multi-stakeholder spaces for participation, shared leadership, policy-oriented analysis, and co-design of strategies and actions.

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