

## Documents

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**RETROFITTING GREEN INFRASTRUCTURE IN KUALA LUMPUR: A DOCUMENT ANALYSIS OF POLICY GAPS AND CLIMATE RESILIENCE**

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**Abstract**

Urban green spaces play a critical role in enhancing environmental sustainability, climate resilience, and the well-being of urban populations. However, the fragmentation of green spaces in Kuala Lumpur presents significant challenges to sustainable urban planning and climate adaptation efforts. This study examines the policy gaps that hinder the effective integration of green infrastructure into Kuala Lumpur's urban planning framework. A qualitative document analysis is conducted to assess national policies, planning guidelines, and international best practices related to green infrastructure and climate resilience. The findings reveal that while Malaysia's policies accentuate the provision of green spaces, they lack comprehensive enforcement mechanisms, leading to inconsistencies in green infrastructure implementation. Key challenges include policy fragmentation, decentralised governance, inadequate financial incentives, and the absence of explicit regulatory frameworks supporting green infrastructure retrofitting. By analysing international models, such as the United Kingdom's Green Infrastructure Standards and Singapore's Green Plan 2030, this study identifies policy strategies that could enhance Malaysia's urban resilience. The study concludes that a systematic retrofitting framework is required to address the existing policy gaps and ensure the strategic integration of green infrastructure into urban development. It recommends adopting international best practices, strengthening regulatory enforcement, and fostering cross-sectoral collaboration to enhance climate adaptation and ecological connectivity. These measures are essential for improving urban sustainability and mitigating the adverse effects of rapid urbanisation and climate change in Kuala Lumpur. © 2025 by MIP.

**Author Keywords**

Climate Resilience; Green Infrastructure; Green Spaces and Networks; Policy Gaps; Urban Area

**References**

- Ponrahono, Z., Zakariya, K.  
**Quality of designs and features of small urban green spaces in Petaling Jaya Town, Malaysia**  
(2021) *Planning Malaysia*, 19 (15).  
A.A., F
- Akbari, H., Cartalis, C., Kolokotsa, D., Muscio, A., Pisello, A. L., Rossi, F., Santamouris, M., Zinzi, M.  
**Local climate change and urban heat island mitigation techniques - The state of the art**  
(2016) *Journal of Civil Engineering and Management*, 22, pp. 1-16.
- Anderson, V., Gough, W.  
**Harnessing the four horsemen of climate change: a framework for deep resilience, decarbonization, and planetary health in Ontario, Canada**  
(2021) *Sustainability*, 13 (1), p. 379.
- Artmann, M., Kohler, M., Meinel, G., Gan, J., Ioja, I.  
**How smart growth and green infrastructure can mutually support each other — a conceptual framework for compact and green cities**  
(2019) *Ecological Indicators*, 96, pp. 10-22.
- (2023) *Urban Green Infrastructure Handbook*,  
Australian Institute of Landscape Architects
- Chen, X., Xu, L., Zhu, R., Ma, Q., Shi, Y., Lu, Z.  
**Changes and characteristics of green infrastructure network based on spatio-**

**temporal priority**

(2022) *Land*, 11 (6), p. 901.

- Chu, M., Lu, J., Sun, D.  
**Influence of urban agglomeration expansion on fragmentation of green space: a case study of beijing-tianjin-hebei urban agglomeration**  
(2022) *Land*, 11 (2), p. 275.
- (2020) *Kuala Lumpur Structure Plan 2040*,  
Kuala Lumpur City Hall
- Faisal, B., Dahlan, M., Chaeriyah, S., Hutriani, I., Amelia, M.  
**Analysis of green infrastructure development policy in Indonesia: an adaptive strategy for sustainable landscape development**  
(2022) *Iop Conference Series Earth and Environmental Science*, 1092 (1), p. 012013.
- Gómez-Villarino, M., Villarino, M., Ruiz-Garcia, L.  
**Implementation of urban green infrastructures in peri-urban areas: a case study of climate change mitigation in madrid**  
(2020) *Agronomy*, 11 (1), p. 31.
- (2023) *Singapore's Green Plan 2030*,  
Government of Singapore
- Guo, R., Song, X., Li, P., Wu, G., Guo, Z.  
**Large-scale and refined green space identification-based sustainable urban renewal mode assessment**  
(2020) *Mathematical Problems in Engineering*, 2020, pp. 1-12.
- Hou, W., Zhou, W., Li, J., Li, C.  
**Simulation of the potential impact of urban expansion on regional ecological corridors: A case study of Taiyuan, China**  
(2022) *Sustainable Cities and Society*, 83, p. 103933.
- Negara, Jabatan Landskap  
*Kajian Keperluan Kawasan Hijau dalam Pembangunan*,  
(n.d). Jabatan Landskap Negara, Malaysia
- Kemarau, R.  
**Spatial temporal of urban green space in tropical city of Kuching, Sarawak, Malaysia**  
(2021) *Journal of Applied Science & Process Engineering*, 8 (1), pp. 660-670.
- Kraemer, R., Kabisch, N.  
**Parks under stress: Air temperature regulation of urban green spaces under conditions of drought and summer heat**  
(2022) *Frontiers in Environmental Science*, 10, p. 849965.
- Lee, A., Jordan, H., Horsley, J.  
**Value of urban green spaces in promoting healthy living and wellbeing: prospects for planning**  
(2015) *Risk Management and Healthcare Policy*, 131.
- Li, F., Zheng, W., Wang, Y., Liang, J., Xie, S., Guo, S., Yu, C.  
**Urban green space fragmentation and urbanisation: a spatiotemporal perspective**  
(2019) *Forests*, 10 (4), p. 333.
- Maryanti, M., Khadijah, H., Uzair, A., Ghazali, M.  
(2016) *The urban green space provision using the standards approach: issues and challenges of its implementation in malaysia*,
- (2010) *National Policy on Climate Change*,  
Putrajaya, Malaysia

- Mohammad Sabri, S. A., Ponrahono, Z.  
**Greening The City: Criteria and Indicators for Evaluating The Effectiveness of Small Urban Parks in Promoting Urban Resilience to Climate Change**  
(2024) *Planning Malaysia*, 22 (30).
- Monteiro, R., Ferreira, J., Antunes, P.  
**Green infrastructure planning principles: an integrated literature review**  
(2020) *Land*, 9 (12), p. 525.
- (2023) *Green Infrastructure Planning and Design Guide*,  
Natural England, United Kingdom
- (2023) *Green Infrastructure Standards*,  
Natural England, United Kingdom
- Nor, A., Corstanje, R., Harris, J., Grafius, D., Siriwardena, G.  
**Ecological connectivity networks in rapidly expanding cities**  
(2017) *Heliyon*, 3 (6), p. e00325.
- Nor, A., Abdullah, S.  
**Developing urban green space classification system using multi-criteria: the case of Kuala Lumpur city, Malaysia**  
(2019) *Journal of Landscape Ecology*, 12 (1), pp. 16-36.
- (2019) *National Urbanisation Policy 2 (NUP 2)*,  
PLANMalaysia, Ministry of Housing and Local Government Malaysia
- (2023) *Implementation Guidelines on Urban Regeneration*,  
PLANMalaysia, Ministry of Housing and Local Government Malaysia
- *Garis Panduan Rancangan Kawasan Lapang*,  
(n.d). PLANMalaysia, Ministry of Housing and Local Government Malaysia
- (2023) *National Physical Plan 4 (RFN4)*,  
PLANMalaysia, Ministry of Housing and Local Government Malaysia
- Rasidi, M., Jamirsah, N., Said, I.  
**Development of urban green space affects neighbourhood community social interaction**  
(2018) *Asian Journal of Environment-Behaviour Studies*, 3 (8), pp. 79-88.
- Rasli, F. N., Kanniaha, K. D., Hob, C. S.  
**Analysis of fragmented green spaces in Kuala Lumpur, Malaysia**  
(2019) *Chemical Engineering*, 72.
- Riechers, M., Strack, M., Barkmann, J., Tschardtke, T.  
**Cultural ecosystem services provided by urban green change along an urban-periurban gradient**  
(2019) *Sustainability*, 11 (3), p. 645.
- Sani, J. A., Sharip, N. A. A., Ibrahim, P. H.  
**Soft-scape quality issues in landscape construction industry: Malaysia**  
(2020) *ALAM CIPTA: International Journal of Sustainable Tropical Design Research and Practice*, 13, pp. 12-17.
- Seng Yeo, O. T., Mohd Yusof, M. J., Maruthaveeran, S., Saito, K., Abu Kasim, J.  
**Green Infrastructure Transitional Management Sphere Analysis of Policies and Regulations In Kuala Lumpur, Malaysia**  
(2022) *Planning Malaysia*, 20 (21).

- Shen, Y., Lung, S.  
**Mediation pathways and effects of green structures on respiratory mortality via reducing air pollution**  
(2017) *Scientific Reports*, 7 (1).
- Yeo, O., Yusof, M., Maruthaveeran, S., Shafri, H., Saito, K.  
**Green infrastructure conceptual framework for Kuala Lumpur**  
(2022) *IOP Conference Series Earth and Environmental Science*, 1053 (1), p. 012002.
- Yin, C., Xiao, J., Zhang, T.  
**Effectiveness of chinese regulatory planning in mitigating and adapting to climate change: comparative analysis based on q methodology**  
(2021) *Sustainability*, 13 (17), p. 9701.

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