

Climate Adaptation to Urban Heat Waves: Lessons from Taipei

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Abstract

Climate change has increased the frequency, intensity, and duration of heat waves worldwide, posing growing challenges for urban sustainability and public health. High-density cities are particularly vulnerable because of urban heat island effects, limited ventilation, extensive impervious surfaces, and uneven adaptive capacities among communities. Taipei, a densely populated subtropical metropolis, has experienced increasing heat stress associated with both climate change and rapid urbanization. This paper examines Taipei's efforts to adapt to heat waves through a qualitative policy-analysis and case-study approach. The study analyzes major challenges facing the city, including rising temperatures, urban heat island effects, social vulnerability, and governance constraints. It further discusses key adaptation strategies, including urban greening and blue infrastructure, heat-health warning systems, climate-sensitive urban planning, community-based adaptation, and cross-sector governance coordination. Taipei has increasingly adopted an integrated approach that combines environmental management, public health protection, urban planning, and community engagement. However, challenges remain regarding population aging, unequal access to cooling resources and green space, occupational heat exposure, and long-term governance demands. Taipei's experience demonstrates that effective heat-wave adaptation requires coordinated actions across environmental, social, health, and institutional systems. The lessons identified may provide useful insights for other high-density cities facing increasing climate-related heat risks.

Keywords: climate adaptation; heat waves; Taipei; nature-based solutions; urban heat island