

Urban Greening and Renewable Energy in Riyadh: Environmental and Public Health Perspectives within Saudi Arabia's Vision 2030

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ABSTRACT

This literature review critically examines the environmental and public health impacts of urban greening and renewable energy integration, especially in the context of Riyadh, Saudi Arabia. Framed within the national Vision 2030 sustainability strategy, the review synthesizes empirical studies that explore the role of green infrastructure and clean energy solutions in mitigating environmental hazards, such as air pollution, urban heat island effects (UHI), and respiratory health risks. Key initiatives—including the Saudi Green Initiative (SGI), Green Riyadh, and King Salman Park—illustrate the transformative potential of large-scale ecological projects that enhance biodiversity, lower surface temperatures, and improve air quality. The review finds that large-scale green infrastructure projects significantly reduce ambient temperatures, improve air quality, and enhance biodiversity. Renewable energy initiatives, particularly in solar and wind, contribute to reducing carbon emissions and fossil fuel dependence. These efforts collectively support Riyadh's KPIs under Vision 2030. However, gaps remain in financing, public engagement, and localized policy execution, especially compared to global benchmarks like China and Singapore. Urban greening and renewable energy offer transformative benefits for Riyadh's sustainability goals. Yet, success depends on adaptive governance, public participation, local expertise development, and flexible implementation tailored to Riyadh's unique socio-environmental context.

Keywords: *Urban Green Infrastructure; Sustainable Urban Development; Urban Heat Island; Climate Resilience; Saudi Arabia Sustainability Initiatives; Urban Biodiversity*

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