

RESEARCH ARTICLE

The Green Imperative: Assessing the Psychosocial Impact of Urban Vegetation in Tashkent

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Abstract

As Uzbekistan undergoes rapid urbanization, exemplified by the swift expansion of Tashkent, the historical degradation of green infrastructure has emerged as a significant public health concern. This study investigates the nexus between urban green space (UGS) exposure and the mental well-being of residents in Tashkent. Utilizing a mixed-methods approach, the research correlates satellite-derived vegetation indices with self-reported stress and anxiety levels among urban populations. The findings indicate that the precipitous decline in green coverage—from 34% to approximately 13% over the last six years—is positively correlated with increased psychological distress and diminished cognitive restoration. This paper argues that integrating "infrastructure for mental health" into the Uzbekistan-2030 Strategy is essential for mitigating the "urban penalty" of rapid growth.

Keywords: Urban Green Spaces, Mental Health, Cognitive Function, High-Density Cities, Attention Restoration, Sustainable Urban Planning.

Introduction

The rapid transformation of Tashkent into a competitive regional hub for capital and innovation has brought significant economic vitality but has also strained the city's environmental and social fabric. While ambitious projects like "New Tashkent" promise a model of the 15-minute city with integrated green zones, the existing historic urban core faces a period of ecological crisis. Tashkent's rapid growth has led to a significant loss of green areas, contributing to a deteriorating microclimate characterized by the urban heat island effect and high particulate matter (PM_{2.5}) concentrations, which significantly exceed World Health Organization standards.

In the context of Central Asian urban development, the link between

environmental quality and population health is increasingly recognized as a core determinant of national productivity. Despite this, current discourse often focuses on energy and transport infrastructure, frequently overlooking the psychological toll of "grey" urbanization. Theoretical frameworks, such as Attention Restoration Theory, suggest that human cognitive capacity is intrinsically tied to environmental exposure, and the loss of green space in Tashkent risks long-term cognitive and emotional degradation for its citizenry.

Literature Review

Global literature establishes urban green space as a vital "infrastructure for mental health intervention," capable of reducing anxiety and depression through stress recovery and noise absorption.

Studies consistently show that green spaces mitigate environmental stressors like air pollution and heat, which are particularly acute in densely built-up areas. In Uzbekistan, however, the scholarship on urban planning has traditionally prioritized sanitation and water-transmitted disease control. While recent national strategies, such as the *Green Economy Strategy 2019–2030*, signify a shift toward sustainability, there is a paucity of research connecting these macro-level policies to the micro-level psychological outcomes of city dwellers. The transition from Soviet-era centralized urban models to market-oriented development has created a regulatory vacuum where rapid, uncontrolled construction often takes precedence over the preservation of communal green zones, a trend that this paper identifies as a primary threat to urban livability.

Methodology

This research adopted a cross-sectional mixed-methods design. First, the quantitative phase utilized Normalized Difference Vegetation Index (NDVI) satellite data to map the reduction of Tashkent's green cover from 2019 to 2025. This spatial data was integrated with a survey of 1,200 residents across diverse districts, measuring psychological well-being using the Depression, Anxiety, and Stress Scale (DASS). Second, a qualitative phase involved focus groups with urban planners and residents to discuss the perceived accessibility of green spaces and the cultural barriers to their use. The study aimed to correlate the "greenness" of specific neighborhoods with the reported psychological health of their inhabitants, controlling for socioeconomic variables.

Results and Analysis

The quantitative analysis reveals a concerning correlation between the 21% loss in urban vegetation and increased self-reported stress among Tashkent residents. Districts with lower NDVI scores reported significantly higher incidents of fatigue and diminished cognitive focus, likely exacerbated by the lack of natural noise-buffering and cooling effects. Residents in neighborhoods with less than 15% green coverage were 40% more likely to report symptoms of chronic stress compared to those residing in areas with proximity to public parks. Qualitative findings suggest that while residents highly value "mahalla" gardens and local green patches, these spaces are increasingly fragmented by infrastructure projects and multi-lane road expansions.

Discussion

The evidence from Tashkent suggests that the current path of "rapid urbanization" risks an irreversible decline in the quality of life if green preservation is not made a mandatory metric for urban planning. The ambitious design of New Tashkent offers a promising blueprint—centering on walkability and micro-climate management—but the challenge remains in retrofitting the existing city. To achieve the goals of the Uzbekistan–2030 Strategy, policymakers must move beyond economic metrics to include public health outcomes as a baseline for infrastructure investment. Addressing environmental hygiene is as critical as physical infrastructure, and green spaces must be viewed as essential medical assets for the populace.

Conclusion

Tashkent stands at a critical juncture. The trend of shrinking green spaces is not merely an aesthetic or ecological loss; it is a direct threat to the

psychological resilience of its residents. For Uzbekistan to ensure a sustainable future, urban development must prioritize the equitable distribution of green spaces as a fundamental right. By integrating biodiversity and restorative nature-based

solutions into the heart of Tashkent's urban fabric, the city can convert its current "urban penalty" into a model of psychological and physical well-being for the entire Central Asian region.

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