Open Access

Urban Ecology Researches

Vol. 17(3), (Series 44): 107-126

DOI: 10.30473/grup.2025.74032.2911

E-ISSN: 2538-3949 P-ISSN: 2538-3930

ORIGINAL ARTICLE

Contemporary Challenges of Urbanization and Urban Development, Case Study: The City of Ahvaz

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Receive Date: 09/Mar/2025
Revise Date: 17/Nov/2025
Accept Date: 02/Dec/2025

How to cite
Allahyari, S., & Soleiman iMoghadam, P. (2025). Contemporary Challenges of Urbanization and Urban Development, Case Study: The City of Ahvaz. *Urban Ecology Researches*, 17(3), 107- 126.

EXTENDED A B S T R A C T

Introduction

Rapid urbanization has become one of the most transformative processes of the twenty-first century, fundamentally reshaping social, economic, and environmental systems in cities worldwide. While urbanization brings significant opportunities for economic growth, innovation, and improved service delivery, it also generates multifaceted challenges related to environmental degradation, spatial inequality, infrastructure pressure, and socio-cultural disruptions. In developing countries, these challenges tend to be more acute due to the rapid pace of urban population growth and the limited institutional capacity to manage it effectively.

Iranian metropolises, including Ahvaz, have undergone substantial demographic and spatial expansion over recent decades. Ahvaz-located in southwest Iran and historically known as a strategic industrial, cultural, and economic hub—has experienced accelerated urban growth driven by population increase, massive rural–urban migration, industrial activities, and uneven spatial development. The city's population increased from approximately one million in 2015 to an estimated 1.3 million in 2023, exerting severe pressure on existing urban infrastructure, public services, land resources, and the natural environment. This has consequently manifested in a broad set of contemporary challenges, including housing shortages, informal settlements, traffic congestion, air pollution, inefficient solid waste management, and deterioration of urban public spaces.

Although several studies have addressed individual aspects of urban challenges in Ahvaz-such as environmental problems, climate impacts, socio-cultural fragmentation, or economic pressures-there remains a gap in the literature regarding a comprehensive and empirical prioritization of the city's multifaceted challenges. Moreover, few studies have systematically linked these challenges with practical strategies for promoting sustainable urban development based on expert perspectives.

Addressing this gap, the present study aims to systematically identify, categorize, and rank the key contemporary challenges of urbanization and urban development in Ahvaz using expert-driven data and multivariate statistical analysis. Additionally, the study proposes strategic directions to support sustainable urban development in the city. Two guiding questions structure the research:

(1) What are the most significant challenges of contemporary urbanization and urban development in Ahvaz, based on expert prioritization?

(2) What key strategies can effectively address these challenges to promote sustainable urban development?

Mothodology

The study adopts an applied research design with a descriptive–analytical methodology. The target population consists of experts, managers, and researchers specializing in urban planning, urban management, and environmental studies in Ahvaz. Using purposive sampling based on criteria such as professional experience, involvement in urban policy-making, and academic contribution, 30 experts were selected from relevant institutions including Ahvaz Municipality, the Department of Housing and Urban Development, Khuzestan Governorate, and academic departments of geography and urban planning.

Primary data were collected through a researcher-designed questionnaire complemented by semi-structured interviews. Data analysis involved both qualitative coding and advanced quantitative statistical techniques. The qualitative phase consisted of extracting key conceptual statements, grouping similar concepts, deriving thematic axes, and validating thematic categories through expert review.

To prioritize the challenges of urbanization, the Johansen exploratory cointegration rank test was utilized due to its capability to handle complex interdependencies and identify significant variables within multivariate systems, even with small sample sizes. The MacKinnon–Haug–Michelis (1999) method embedded within the Johansen test was used to determine the statistical significance of each challenge based on eigenvalue magnitudes and significance levels.

Challenges were organized across five major dimensions-environmental, social/cultural, economic, institutional/structural, and physical/infrastructural---totaling 30 challenge indicators. Additionally, to identify practical strategies for addressing these challenges, descriptive statistics and a radar model were employed. Experts rated the effectiveness of 15 proposed strategies on a 0-10 scale, and mean scores were used to generate the strategic radar diagram.

Instrument validity was ensured through content validation by three experts, and reliability was confirmed via Cronbach's alpha, yielding coefficients above 0.79 across all dimensions, with an overall reliability of 0.88, indicating strong internal consistency.

Fingdings

1. Identification and Prioritization of Key Urban Challenges

The findings demonstrate that 21 out of the 30 assessed challenges were statistically significant at the 0.01 level according to the Johansen test, validated by the MacKinnon–Haug–Michelis criteria. These represent the most pressing challenges confronting Ahvaz's urban system.

The highest-ranked challenges include:

1. Increased housing demand and rising land and housing prices (eigenvalue: 0.899)
2. Failure to relocate military garrisons outside the city (0.845)
3. Prolonged delay in completing the Ahvaz metro system (0.801)
4. Inefficient solid waste collection and environmental pollution (0.763)
5. High unemployment and limited job opportunities (0.762)
6. Weak urban management and slow implementation of urban projects (0.731)

Other challenges identified as critical include disordered road networks, lack of marketplace regulation, proliferation of deteriorated urban fabric, traffic congestion, uncontrolled land-use conversion in peri-urban areas, shortage of green and recreational spaces, poor quality of life, overcrowding, spread of informal settlements, severe dust storms, low private-sector investment, poverty pockets, financial constraints of the municipality, migration pressures, and shortage of potable water.

2. Dimension-Level Analysis

Across the five major dimensions:

- Physical/infrastructural challenges ranked highest (eigenvalue: 0.686), reflecting

severe infrastructure deficiencies.

- Economic challenges followed closely (0.684), particularly housing and unemployment.
- Social/cultural challenges (0.507) and institutional/structural challenges (0.478) demonstrated medium-level pressures.
- Environmental challenges ranked lowest (0.466) but remained significant, particularly dust storms, waste management, and green space scarcity.

3. Strategic Priorities for Sustainable Urban Development

The radar model revealed the most effective strategies as perceived by experts:

1. Strengthening urban public–private services
2. Relocating industries and military garrisons outside the city
3. Developing green urban infrastructure
4. Expanding public transportation and completing the metro
5. People-centered urban regeneration
6. Addressing informal settlements
7. Smartening urban management systems
8. Revising land-use policies
9. Strengthening resilience of deteriorated areas
10. Revitalizing historic and central urban districts

These strategic priorities reflect the need for integrated governance, infrastructure modernization, environmental sustainability, and socially inclusive planning.

Discussion and Conclusion

The study highlights that Ahvaz, despite its strategic economic advantages and cultural diversity, faces a complex array of challenges that impede sustainable urban development. Rapid population growth, inappropriate land-use trends, infrastructural shortcomings, unequal spatial development, and weak institutional performance collectively contribute to declining urban livability.

The high-ranking challenges-such as housing inflation, infrastructural delays, managerial inefficiencies, and environmental hazards-demonstrate the extent to which urban systems in Ahvaz require structural transformation. Many of these findings align with international research on cities in developing regions, confirming that unmanaged urban growth often results in socioeconomic inequality, environmental degradation, and spatial fragmentation.

However, some localized challenges-such as the non-relocation of military garrisons, market disorder, and the prolonged stagnation of the metro project-highlight context-specific governance issues unique to Ahvaz.

By proposing practical strategies rooted in expert consensus, the study contributes to both academic understanding and applied urban governance. Implementing the recommended strategies-particularly strengthening administrative capacity, upgrading infrastructure, enabling citizen participation, improving service delivery, and expanding green and mobility networks-can significantly enhance the sustainability, resilience, and livability of Ahvaz.

This extended abstract thus underscores the importance of integrated, participatory, and sustainability-oriented urban planning approaches for addressing the multifaceted challenges of contemporary urbanization in Ahvaz.

K E Y W O R D S

Urbanization, Contemporapry Challenges, Urban Development, Ahvaz Metropolis

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