

## **Issue Identification of the Tehran Metropolitan Fringe Using the PDIA Approach: Problem-Driven Iterative Adaptation**

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### **Extended Abstract**

#### **Introduction**

The primary objective of this study is to employ the PDIA framework to systematically identify and categorize the complex issues affecting the Tehran metropolitan fringe. By focusing on problem identification, the study seeks to shift the policy-making paradigm from reactive, symptom-based approaches to proactive, problem-driven strategies. The significance of this research lies in its attempt to address the persistent failure of conventional urban planning methods to resolve the region's challenges. Despite significant financial investments and large-scale projects, issues such as traffic congestion, air pollution, water supply shortages, informal construction, land encroachment, and unsustainable revenue streams remain unresolved. These problems, often termed "wicked" due to their complexity and resistance to resolution, drain institutional capacity and erode public trust in governance systems. The PDIA approach offers a pathway to reframe these challenges, foster stakeholder collaboration, and build adaptive capacity for sustainable urban development.

#### **Methodology**

The research adopts a descriptive-exploratory approach, utilizing a combination of qualitative and quantitative methods within the PDIA framework. The methodology is structured in three key stages:

**Issue Identification:** Through document analysis and meta-analysis, the study identifies 100 issues affecting the Tehran metropolitan fringe, categorized into seven domains: physical-spatial, economic-social, institutional, legal, administrative divisions, supervisory, and policy-related. These issues were extracted from approved documents, policy directives, and expert consultations.

**Issue Analysis and Prioritization:** Using the Delphi method, interviews with 43 experts across disciplines (e.g., urban planning, geography, political geography, and development economics) were conducted to refine and prioritize the identified issues. The MICMAC software was employed to assess the weight and ranking of these issues based on their impact on integrated fringe management.

**Typology and Categorization:** Issues were classified into four types—current, emerging, hidden, and institutionalized—to determine their lifecycle stage and policy relevance. This typology helps policymakers understand the urgency and impact of each issue, guiding resource allocation and intervention strategies.

## Results and discussion

The study identifies several critical issues affecting the Tehran metropolitan fringe, with physical-spatial and environmental challenges, followed closely by economic-social issues, emerging as top priorities. Key findings include

**Physical-Spatial and Environmental Issues:** The fringe faces severe environmental degradation, including land subsidence, pollution of biological resources, and encroachment on ecologically sensitive areas. Urban sprawl and the proliferation of informal settlements exacerbate these challenges, with the number of cities in the 6,000-square-kilometer fringe growing from five in 1986 to 26 in 2021. These trends threaten the fringe's role as an environmental buffer for Tehran

**Economic-Social Issues:** High levels of poverty, spatial-social segregation, and unequal access to opportunities drive migration to the fringe, where population growth exceeds 5% annually compared to Tehran's 2%. This migration fuels informal settlements and increases pressure on infrastructure and resources

**Institutional and Legal Fragmentation:** Over 24 organizations are involved in policy-making for the fringe, leading to overlapping responsibilities, conflicting regulations, and a lack of integrated management. Legal ambiguities, particularly regarding land use and infrastructure provision, hinder effective governance

**Hidden Issues:** The study highlights "hidden" issues with significant long-term impacts, such as the high value of land in the fringe, which incentivizes illegal land-use changes, and the lack of a comprehensive management framework for industrial estates and independent zones like Shahr-e Aftab

**Current Issues:** Ongoing challenges include legal and administrative overlaps, environmental pollution due to unchecked urban growth, and weak regional planning policies. These issues require immediate attention to prevent further deterioration

The prioritization of issues reveals that hidden, high-impact problems—such as unregulated construction and institutional ambiguities—should take precedence in policy agendas, followed by current issues like migration and urban sprawl.

## Conclusion

The Tehran metropolitan fringe faces a complex array of challenges that threaten its sustainability and role as an environmental and social buffer for the capital. The PDIA approach offers a promising framework for addressing these issues by focusing on problem identification, iterative adaptation, and stakeholder collaboration. By recognizing the wicked nature of fringe issues, prioritizing hidden and current challenges, and fostering inter-agency coordination, policymakers can move toward sustainable development. The study underscores the importance of small, tangible successes in building institutional capacity and public trust, paving the way for long-term solutions. Future research should focus on the subsequent stages of PDIA, including strategy

formulation, action planning, and evaluation, to operationalize these findings and ensure the sustainable development of the Tehran metropolitan fringe.

**Keywords:** Problem-Driven Iterative Adaptation (PDIA) Method, Tehran Metropolitan Fringe, Wicked Problems

**Citation:** Javani, H., Sarvar, R., Tavakolan, A. (2025). Issue Identification of the Tehran Metropolitan Fringe Using the PDIA Approach: Problem-Driven Iterative Adaptation. *Urban and Regional Policy*, 4(14), 1-3.

