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From “Toilet Revolution” to Smart Urban Governance: Citizen Perceptions of Eco-Friendly Public Toilets in Shijiazhuang, China

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Abstract

Since 2018, Chinese cities have promoted a national “Toilet Revolution” that links basic sanitation upgrades with goals of ecological civilization and smart-city construction. In Shijiazhuang, Hebei Province, China, this agenda has led to the redesign and upgrading of 244 urban public toilets, guided by the principles of “one toilet, one landscape” and differentiated first-, second- and third-class standards. New “five-star” facilities feature expanded floor areas, gender-sensitive layouts, mother-and-baby rooms, accessible spaces, and rest areas, aiming to integrate hygiene, comfort, and aesthetics. At the same time, innovative deodorization systems using plant-based mist and negative-pressure ventilation, together with IoT-enabled monitoring platforms and mobile apps for toilet location and usage data, promise odor-free, intelligently managed public spaces.

This paper investigates how such technological and design innovations are experienced and interpreted by urban residents, and what they reveal about changing forms of state–society relations in everyday infrastructure. Focusing on Shijiazhuang as an in-depth case, the study asks: (1) how citizens evaluate the comfort, inclusiveness, and safety of upgraded toilets; (2) how smart management features and environmental technologies influence perceptions of government responsiveness and service quality; and (3) how inequalities of gender, age, and mobility shape access to and use of “smart” sanitation.

Methodologically, the research combines structured user surveys at a stratified sample of upgraded toilets, semi-structured interviews with municipal officials, facility managers, and technology providers, and analysis of anonymized data from the smart toilet management platform, including usage frequency, fault reports, and environmental indicators.

By bringing social science perspectives to a domain often treated as purely technical, the paper contributes to debates on infrastructure, digital governance, and urban citizenship. It argues that smart,

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eco-friendly toilets are not only sanitary facilities but also symbolic sites where notions of modernity, dignity, and state care are negotiated in everyday life, offering lessons for inclusive and people-centered urban governance in the Global South and beyond.

Keywords: Urban Governance, Public Policy, State-Society Relations, Citizen Satisfaction, Inclusive Infrastructure, Public Service Delivery, Local Government, China Studies