

## **Wastewater Irrigation in Underserved Settlements: Public Perception and Implications for Wastewater Management in Colombo, Sri Lanka**

**Authors :** Chethika Gunasiri Wadumestrige Dona, Kensuke Fukushi

**Abstract :** Urban poverty and water pollution are interrelated challenges that severely impact the quality of life in cities, particularly for vulnerable populations. The rapid growth of informal settlements in developing nations has led to increased wastewater production and inadequate wastewater management systems. In Colombo, the most densely populated and urbanized city in Sri Lanka, 65% of water bodies are classified as having poor water quality, with 50% in very poor condition. Informal settlements are major contributors to this urban water pollution. With growing interest in wastewater reuse for agriculture, this study aims to evaluate public perceptions of wastewater irrigation as a wastewater management strategy in underserved settlements in Colombo and to identify the factors shaping these perceptions. A survey was conducted among 166 households in an underserved settlement located in the Colombo city. The study found that a majority of residents (57.8%) consider wastewater irrigation a viable strategy for managing wastewater. Binary logistic regression was used to analyze factors influencing residents' perceptions, including age, gender, education level, current involvement in urban farming, and interest in urban farming. The results indicate that older residents tend to have negative views on wastewater irrigation, whereas women and residents with higher education levels are more likely to have positive perceptions. Those currently involved in or interested in urban farming also displayed more favorable attitudes toward wastewater reuse. The significant determinants of residents' perceptions were education level, current involvement in urban farming, and interest in urban farming. These findings emphasize the need to understand and address community attitudes toward wastewater reuse as a wastewater management solution in underserved areas in Colombo city. The study also highlights the importance of tailored interventions that resonate with residents' beliefs to promote urban farming as a solution for managing wastewater and reducing urban water pollution. The insights from this research provide valuable guidance for policymakers and urban planners seeking to implement decentralized, agriculture-based wastewater treatment systems in underserved urban settlements, contributing to the broader goal of sustainable urban development.

**Keywords :** wastewater, perception, urban agriculture, underserved settlements, irrigation, re-use

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