# Managing sanitation in Future Cities: groundwater and sanitation interlinkages in peri-urban Bangalore

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**Abstract:**

Many peri-urban towns in India are poised to become the future cities. Presently, these towns depend either completely or significantly on groundwater to meet the domestic, agricultural, and domestic demands. In peri-urban towns, water quantity and water quality are both affected by the existing sanitation and water supply conditions. In peri-urban towns, on-site sanitation systems (OSS) along with past pollution, solid waste disposal, agricultural pollution, and livestock waste disposal are all potential sources of contamination. The Swachh Bharat Mission (SBM) is a promising solution to address the issues of sanitation and water in rapidly urbanizing areas. However, without an adequate understanding of all potential sources of contamination, SBM may achieve the goal of universal sanitation but may not meet the goal of safe drinking water. The study uses an interdisciplinary approach to map out social creation of pollution and its impact on water quality. Based on large scale household surveys on sanitation practices and water management, water quality tests across all seasons, and groundwater contours, our work maps the sources and pathways of all potential contaminants in a peri–urban town and suggests policy interventions based on the source and type of contaminants. This can be a potential roadmap to achieve the twin goals of universal sanitation and access to safe domestic water.

**Fig. 1: Contamination pathways and potential policy interventions in peri-urban towns**



**Future of sanitation in Future Cities**

There is significant potential for local domestic water supply and sanitation systems to be long term solutions in rapidly growing peri-urban areas. However, as towns grow and become more populated, their water consumption as per government norms also increases. Technically, if the per capita water use in toilets increases, it will reduce the cost efficiency of the on-site sanitation systems (such as improved septic tanks) as pits fills faster and require frequent emptying. Given that the peri-urban towns are young, there is scope to introduce subsidized water-saving sanitation options (e.g. Ecosan toilets) on a large scale. Alternatively, as more apartments are built over time, apartment level wastewater treatment can be a potential solution. Coupled with repeated engagement with the communities to influence people’s sanitation and water use behavior can provide a sustainable solution to the problem of groundwater and sanitation nexus.