

## Urban Water Supply and Delhi: Influx of R.O. Devices and its Socioenvironmental Implications

Govind Singh<sup>1\*</sup>, Aditya Srinivasan<sup>2</sup>, Abhinav Pal<sup>2</sup>

<sup>1</sup>Department of Environmental Studies, Indraprastha College for Women, University of Delhi, India

<sup>2</sup>Delhi Greens. P.O. Box 4855, New Delhi - 110023, India

\*Corresponding author. Email: [contact@govindsingh.com](mailto:contact@govindsingh.com)

**Abstract:** Water is a basic human requirement and a critical resource for sustaining the scale and pace of urbanisation being witnessed since the industrial revolution. With a Census population of well over 17 million, the National Capital Territory of Delhi has been struggling to bridge the gap between water demand and supply [1]. Water shortage as well as issues related to water quality in the municipal supply have led to the emergence of coping strategies in Delhi households [2]. One such coping strategy, mainly against impaired water quality, is the installation of reverse osmosis (R.O.) devices. The present research contribution attempts to study the increasing dependency of households in Delhi on R.O. devices and brings forward its implications on Delhi's urban water supply. The research focuses on five colonies in Delhi where preliminary water quality assessment was carried out so as to conduct a need assessment of installing R.O. devices versus the actual installation of these devices in individual households. Reverse osmosis is essentially a technique to reduce the hardness of water and the process involves demineralisation or deionisation of water by pushing it under pressure through a semi-permeable membrane. Consequently, an R.O. device is effective in households receiving water with high Total Dissolved Solids (TDS). However, an R.O. is neither required nor effective in households receiving water with low TDS, which were noted in the study area. This is because R.O. devices are not an effective method against biological impurities. Despite this limitation, over 78% of the households in the study area were found to rely on R.O. devices as a coping strategy against impaired municipal water supply. While some of these R.O. devices are also fitted with UV-filters (which help address biological impurities in water), the large-scale use of R.O. devices in households that do not require this technology poses a serious threat to urban water sustainability in Delhi.

**Keywords:** water, urbanisation, reverse osmosis, urban water supply, Delhi.

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