

Estimating City-Level Rooftop Rainwater Harvesting Potential with a Focus on Sustainability

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Abstract : Rooftop rainwater harvesting is a crucial practice to address water scarcity, pollution, and flooding. This study aims to estimate the rooftop rainwater harvesting potential (RRWHP) for Suryapet, India, using building footprint data and average rainfall data. The study uses rainfall grids from the India Meteorological Department and Very High Resolution Satellite data to capture building footprints and calculate the RRWHP for a five-year period (2015-2020). Buildings with an area of more than 20 square meters are considered. A conservative figure of 60% efficiency for the catchment area is considered. The study chose 31,770 buildings with an effective rooftop area of around 1.56 sq. km. The city experiences annual rainfall values ranging from 791 mm to 987 mm, with August being the wettest month. The projected annual rooftop rainwater harvesting potential is 1.3 billion litres.

Keywords : buildings, rooftop rainwater harvesting, sustainable water management, urban

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