

GEO INFORMATICS APPLICATION FOR SUSTAINABLE MICRO LEVEL WASTE WATER MANAGEMENT FOR URBAN AREAS: A CASE STUDY BASED ON MORATUWA MUNICIPAL COUNCIL

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Abstract

Globally, the counties are moving toward measures for sustainable development to develop sustainable cities in their territories. However, there are many challenges to such development. It signifies that all the countries are working on constructing sustainable cities, but the various challenges affect the city development's long-term viability. Among these, waste disposal is a serious issue that can devastate a sustainable city. Thus, Water that has changed due to harmful compounds like chemical and biological properties is referred to as wastewater. Wastewater is categorized into three types based on its origin: home waste, industrial waste, and rainfall waste. Therefore, Sri Lanka is a country with excellent water resources. Based on that, this study focused on the Moratuwa MC area in Colombo district, the western province of Sri Lanka. However, water consumption is high in this area, as are water treatment and sewage discharge. The main objective of the study is to identify sustainable micro-level planning for effective wastewater management in this area. The sub-objectives are to identify the sources of wastewater and hotspots contaminated by wastewater in the study area and propose reuse strategies for wastewater treatment. Primary and secondary data were collected for the study. The primary data were collected through Digitizing, direct observation, questionnaires, interviews, and discussion. On the other hand, the secondary data were obtained through books, previous research publications, magazines, website data, municipal council, urban development authority, data from water supply drainage board, etc. The data was gathered and evaluated using geospatial tools such as ArcGIS 10.3, JOSM, OSM, Google Earth Pro, HOT Tasking Manager, etc. Finally, the analysis reveals that only 19 of the 42 GNDs in the study area have a Centralized Treatment Plant (CTP) located as WWM treatment plants. Geographic information tools were primarily utilized to study to discover more GNDs in Moratuwa MC's sustainable WWM initiatives. Plans for integrating a gravity-based sewer network and constructing Decentralized Treatment Plants (DTP) were also recommended.

Keywords: Waste Water Management (WWM), Moratuwa MC, sewer network, gravity, CTP, DTP