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Application of MCDM – TOPSIS for determination of performance index of sewage treatment plants - A case study of Gujarat, India

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The health of city is massively influenced by its sanitation facilities and the way of maintaining the hygienic life of population. Sewage treatment plants (STPs) plays a vital role in the municipal hygiene. For developing countries, parameters like inadequate funds, longstanding technology, deficit technical manpower and ignorance towards operations and maintenance, etc., causes to reduce efficiency of sewage treatment plants. According to Vandeweerd *et. al.* (1997), more than 90% of sewerage in the developing world is discharged directly into rivers, lakes, and coastal waters and breaking down of STPs also contribute in this discharge. At present, there is no method being adopted to evaluate the efficiency of STPs. The Fuzzy Multi Criteria Decision Making (FMCDM) approach helps to rank when there are 'n' no. of criteria to evaluate the 'j' no. of objects. FMCDM approach also helps to simulate when there is a need of upholding the situations. The present research work is carried out in the state of Gujarat of India. Total six STPs having nearly equal treatment capacity were selected to inspect. The performance was monitored on the basis of temperature, total dissolved solids (TDS), suspended solids (SS), biological and chemical oxygen demand (BOD and COD), oil and grease, pH and chlorides. The monitoring, sampling and characterization were carried out as per APHA standards and for raw as well as treated sewage. Applying FMCDM Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) the efficiency has been evaluated. Out of six the one at Bamroli has identified as rank I with efficiency of 96%.

Biography

Khambete A K have more than 35 years of teaching and industrial experience in the field of Environmental Engineering. She has worked as an expert and director on various government as well as semi-government bodies of environmental discipline. She also has command over fuzzy logic system approach towards environmental monitoring systems (EMS). She had more than 20 publications at national and international level on various practical approaches towards EMS.

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