Multi-criteria decision-making model for wastewater reuse application: a case study from Iran

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\textbf{ABSTRACT}

Wastewater reuse is considered as a solution to better management of the water resources that presents a viable method to solve water shortage problems, especially in regions where available water resources are limited. Selection of wastewater reuse application for different uses is a multidimensional process which involves multiple criteria and multiple stakeholders. Multi-Criteria Decision-making (MCDM) approach is often used to solve various decision-making problems. The analytical hierarchy process (AHP) method has been widely used to solve MCDM problems. In this study, a MCDM model based on AHP has been implemented in order to find the best alternative for using wastewater in Iran as a case study. For this purpose, a hierarchy structure with different levels (four criteria, sixteen sub-criteria, and five alternatives) is applied, and after performing the model and sensitivity analysis, the results are presented. Results show that groundwater recharge is the best alternative for wastewater reuse, followed by environmental use. The applied method is an effective approach and could help decision-makers through giving solutions to manage water resources.

\textit{Keywords:} Wastewater reuse; AHP; Multi-criteria decision-making; Water resource management; Iran

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