The title (العنوان):

Application of Data Envelopment Analysis to Assess and Improve Efficiencies of Activated Sludge Treatment Plants

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Abstract: The aim of the investigation was to apply data envelopment analysis to assess and improve the efficiencies of activated sludge treatment plants using a case study from Algeria. The treatment capacities of 35 plants were analyzed and then a determination was made if they operated at their optimal sizes. Based on the wastewater treatment plants (WWTPs) examined, the Data Envelopment Analysis (DEA) method showed that 94% of the plants did not operate at their optimal sizes (i.e., efficiency scores less than 1). This indicated they were inefficient from a treatment capacity point of view and may reflect poor management, due possibly to a deficiency in knowledge about the best operating conditions. The DEA analysis indicated that smaller WWTPs were more efficient (i.e., scores closer to 1) compared to larger ones. This should encourage decision-makers to choose for the construction of small or medium-sized WWTPs that are more manageable and can be operated at their optimal size.

Key words: Wastewater treatment plants ; Activated sludge ; Pollution load ; Purification capacity ; Data envelope analysis ; Efficiency ; Optimal size ; Capacity

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