

ABSTRACT

Citarum is the longest and largest river in the province of West Java. High river potential cannot be utilized properly due to poor planning and management. One of the impacts is the reduction in water quality due to river pollution by industrial waste without doing a pre-treatment using Waste Water Treatment Plant (WWTP). These problems can be dealt with by building a communal WWTP by the local government in accordance with the user group. Communal WWTP user groups are determined based on proximity between industries. This study aims to design a Decision Support System (DSS) to determine the communal WWTP user groups.

This research begins with initial observation, problem identification, problem ownership, and problem statement in the first stage, namely the intelligence phase. The second stage is the design phase which contains alternative searches, determining criteria, identifying input and output systems, and designing the components contained in the DSS. The results of the design carried out in the second stage, were used to select the best alternative in the third stage, namely the choice phase. The implementation phase is the last stage to carry out the implementation process of the application interface and conduct an analysis design of the system being built.

This DSS application is able to provide alternative recommendations for optimal communal WWTP user groups through the results of grouping, using the Agglomerative Hierarchical Clustering (AHC) method. The alternative results of communal WWTP user groups are then displayed through Geographic Information System (GIS) maps that are embedded into the system. The system being built, can help local governments to determine the optimal group of WWTP users and reduce installation cost and also operational costs that need to be spent.

Keywords: agglomerative hierarchical clustering, waste water treatment plant, geographic information system, decision support system