

Evaluation of Communal WWTP Performance Based on Technology Management in Kabupaten Sleman D.I. Yogyakarta

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Communal WWTP is one of the solutions of domestic wastewater treatment when a city wide centralized WWTP is difficult to be implemented. Yogyakarta has a centralized WWTP that mainly covers the urban area of Yogyakarta except Sleman District. There are at about 130 Communal WWTP equipped with Anaerobic Baffled Reactor (ABR) and/or Rotating Biological Contactor (RBC) in Sleman District. However, there are very few studies comparing the performance of these two technologies from the management perspective. The purposes of this research is to know and evaluate the management situation of Communal WWTP as well as evaluate the effectiveness of Communal WWTP in Sleman Regency based on the processing technology used.

The qualitative data in this research was obtained from the tools (interview, questionnaire, and observation sheets) which were made based on the prevailed regulations such as PERMEN LHK No. 11 Tahun 2017, PERMEN PUPR No. 4 Tahun 2017, and PERMEN LHK No. 68 Tahun 2016 along with scientific journals from previous research. Data collection was conducted from January to March 2020. Due to the COVID-19 global pandemic, the data was collected through phone-calls and Google Forms. The data contains managerial, operational, community participations, and physical effluent conditions from 8 Communal WWTP in Sleman District based on the secondary data obtained from Sleman Environmental Protection Agency 2018. The qualitative data was converted to quantitative data using a scoring method to compare both technologies between ABR and RBC.

CWWTP with ABR has higher score on operational cost, unit failure and operational problems compared to CWWTP with RBC. However, the effluent physical quality of RBC scored higher than ABR. Comparing total score of CWWTP between ABR and RBC, it showed that the ABR reached commonly higher value than the RBC technology group (> 90%). On the other hand, CWWTPs with RBC has a total score below 85% and Condongcatur CWWTP has the lowest scoring percentage. These results shows that although CWWTPs with RBC are preferable in term of effluent physical quality, CWWTPs with ABR are better in term of operational cost, unit failure, and operational problems. Based on this study, CWWTPs with ABR technology is more effective for Sleman Regency, D.I. Yogyakarta evaluated by the operational costs and damages to the WWTP unit. However, further research is required to compare the effectivity of influent treatment effectivity between ABR and RBC.

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