

Spatio-temporal variability of river water quality of COVID-19 post-second wave outbreaks: A study from Opak and Progo Watersheds, Indonesia

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ABSTRACT

The imposition of restrictions on community activities in response to the COVID-19 outbreak has had a positive impact on environmental quality in various countries, including improving river water quality. In this paper, spatio-temporal variations in water quality in the Opak and Progo Watersheds after the second wave of COVID-19, is investigated. This study utilises primary and secondary data obtained from observation, literature study, and data documented by several agency. The data were statistically analyzed by independent sample t-test and simple linear regression, matching analysis and calculation of pollution index, and the Geographic Information System analysis employing Average Nearest Neighbour. The results of the study found that restrictions on community activities that had been carried out repeatedly during the pandemic had an impact on improving water quality. However, the quality improvement was only found in some parameters. In the period after the second wave of the COVID-19 pandemic, most of the water quality parameters still meet the national quality standards. Good water quality parameters and limiting factors are dispersed distributed. This shows the spatial homogeneity of water quality in both watersheds, without any pollution zones, even in the megacity of Yogyakarta. In summary, this study presents new insights to understand the the impact of the COVID-19 pandemic on river water quality, in watersheds characterized by the dominance of population activities in rural areas.

Kata Kunci: River water quality, watershed, COVID-19 pandemic