

Water Quality Index (WQI) Analysis as an Indicator of Ecosystem Health in an Urban River Basin on Borneo Island

ABSTRACT

The health of the river basin is characterised by its ecosystem health to provide significant and valuable resources and services for human use and the basin itself. However, the development of urban space and the intensification of human activities surrounding the river ecosystem have greatly disturbed the river's health, thereby impacting human and environment. Therefore, this paper seeks to assess the degree of quality and cleanliness of river water, which is one of the river basin's health indicators. To identify the issues that affect the river's health, water quality indicators are used. The Inanam–Likas River Basin has been chosen due to its location within an urban area. Water quality data from 2014 to 2018 were analysed using the Water Quality Index (WQI) developed by the DOE. In addition, the Mann–Kendall test is also used to observe the trend and direction of the river's health using WQI data from 1999 to 2019. Based on the analysis, the health of the river basin is moderately polluted due to land clearing and domestic sewage activities. This is shown by the relatively high percentage frequency of contaminated levels of WQI SS and NH₃-N. The health level of the river in the upper course is better than in the lower course. This is because development and human activities are more concentrated in the lower course area compared to the upper course. Although the river's health is currently at a moderate level, the trend indicates that its health is improving.