ABSTRACT

The Citarum Harum program, initiated by the Coordinating Ministry for Maritime Affairs (Kemenko Kemaritiman), aims to address the current condition of the Citarum River, the longest river in West Java. Previously dubbed as one of the most polluted and contaminated rivers in the world, this situation has been exacerbated by the improper habits of the local community, who often dispose of trash indiscriminately near the riverbanks. Consequently, the accumulation of waste in the river has led to various issues, including the potential for floods and disease transmission, necessitating serious attention for its cleanup.

Despite numerous efforts made to respond to the waste issue along the river, achieving optimal results has not yet been accomplished. One of the obstacles is the difficulty in collecting and lifting distributed waste, both in the middle and along the edges of the river. To address this issue, this research provides a solution in the form of traps and an automated waste lifting system in the form of a prototype. This system prototype utilizes a belt conveyor to lift waste and installs traps at an inclined angle to direct the waste towards the belt conveyor with the assistance of the river current. Additionally, this system is equipped with monitoring for the waste collection container, which will provide an alert when the container is full. The prototype is integrated with a monitoring system for the waste collection container, which will send weight and height data of the waste through the Firebase IoT platform and display it in a mobile application, along with warning messages sent via WhatsApp.

The outcome of designing this waste trap and lifting system along the river is the ability to automatically lift surface-level waste in the river. The system can operate 24 hours a day, yet remains under user supervision. The designed belt conveyor can lift waste with a maximum weight of approximately 1 kg. Monitoring the waste collection bin through the application can be done remotely, at a distance of around 250 meters from the system's location. Although sending warning messages via WhatsApp takes 15-25 seconds due to the need for sensors to read the waste height in the bin beforehand, this solution is expected to offer a more effective alternative to addressing the waste issue along the river, while also contributing to overall environmental cleanliness and conservation.

Keywords: garbage, river, trap, lift, monitoring, warning message