ABSTRACT

Indonesia is a forested area with diverse ecosystems, ranging from highland and lowland tropical forests to peat swamp forests, freshwater swamp forests, and mangrove forests. Therefore, Indonesia is referred to as the "lungs of the world". Ironically, even though it is claimed to be the "lungs of the world", Indonesia is one of the countries with the largest carbon dioxide emissions in the world, equivalent to around 1.98 billion tons of CO^2 emissions annually. This is justified by considering the mitigation mechanism that does not work proportionally, so that fire fighting activities in the forest are only carried out when the fire is very large

Therefore, we need a device that can be used in the field to monitor forest conditions in real time. This forest fire detector is an electronic system capable of transmitting field data to operators via an Internet connection (IoT) in real time. The data appears in the form of temperature, air/smoke content in the forest, fire conditions around the device, and the location of the device itself. These four data are important in monitoring the condition of the forest so that prevention can be done early on before a larger forest fire occurs. The hardware used in this monitoring system consists of Lora which acts as a receiver, Arduino uno as a microcontroller, and a GSM module (SIM800L).

The result of this research is a tool that can receive and send data to the website and assist operators and officers in knowing the condition of the forest in real time connected to the website. The data sent is in the form of the value of each existing sensor. The data is sent using a GSM SIM 800L module which is connected to the internet using several SIM cards, namely Axis, IM3, and Tri. With each card has a certain delivery speed. Axis with an average time of 47.521 seconds, IM3 with an average time of 51.807 seconds, and Tri with an average time of 48.89 seconds.

Kata Kunci: *Arduino Uno, Forest, IoT, Long Range (LoRa), SIM800L*