

**REAL-TIME DATA VISUALIZATION FOR THE DECISION SUPPORT
SYSTEM OF AN IOT-BASED OUTDOOR AIR QUALITY MONITORING
SYSTEM**

By

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.



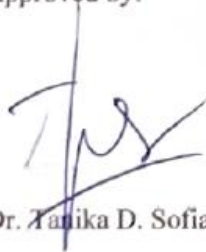
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ABSTRACT

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Air pollution is a major global health issue, with 92% of people living in areas with poor air quality, causing around 7 million deaths each year. In Indonesia, new policies focus on improving air quality through carbon trading and taxes. This study creates a real-time air quality monitoring dashboard using HTML, CSS, and JavaScript to display data on PM_{2.5}, PM₁₀, CO₂, temperature, and humidity, updating every second. The dashboard features gauge and bar charts with easy-to-understand color indicators. Real-time CO₂ emission forecasts, updated every 5 minutes, help reduce carbon tax costs by allowing for a leaner industry. The dashboard calculates carbon tax from hourly CO₂ emissions, supporting decision-making, especially in industrial settings. Users can adjust tax rates and download historical data for deeper analysis. Moreover, the availability of the night mode and many other accessible features, the dashboard is user-friendly on various devices. Despite a 10 - 15 second delay in updates from the Google Sheets database, it remains accurate. Optimized for larger screens, it can be adapted for smaller devices. This project enhances air quality monitoring and management in Jakarta and nearby industrial areas by integrating emission forecasts and carbon tax calculations into strategic decisions.

Keywords: Air Quality Monitoring, Real-Time Data Visualization, Industrial Pollution, Decision Support Systems, Carbon Dioxide Forecasting.

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DEDICATION

I dedicate this work for my supportive parents, family, lecturers, and friends.

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