

**KAJIAN EMISI CO₂ KENDARAAN BERMOTOR DI KOTA SURABAYA
BAGIAN SELATAN SEBELUM DAN SAAT PEMBERLAKUAN
PEMBATASAN KEGIATAN MASYARAKAT (PPKM)**

Oleh:
Kamila Putri Hafizha

INTISARI

Kota Surabaya menjadi kota dengan jumlah kendaraan bermotor terbanyak di Jawa Timur dengan peningkatan jumlah kendaraan roda 2 sebesar 7,03% setiap tahunnya. Semakin pesatnya perkembangan sektor transportasi ini maka semakin besar pula emisi CO₂ yang dihasilkan. Adanya pandemi COVID-19 mengharuskan masyarakat membatasi aktivitas di luar ruangan. Kota Surabaya termasuk salah satu kota di Indonesia yang menerapkan Pemberlakuan Pembatasan Kegiatan Masyarakat (PPKM) untuk memutus rantai pandemi COVID-19. Hal ini berimbas pada aktivitas pergerakan kendaraan masyarakat baik di dalam Surabaya maupun yang masuk ke wilayah kota. Penelitian ini memiliki tujuan untuk 1) menghitung jumlah emisi CO₂ kendaraan bermotor di Surabaya bagian selatan, 2) menganalisis pengaruh PPKM terhadap jumlah emisi CO₂ kendaraan bermotor di Surabaya bagian selatan, dan 3) memetakan distribusi spasial emisi CO₂ kendaraan bermotor di Surabaya bagian selatan sebelum dan saat PPKM. Data yang digunakan terdiri dari jumlah kendaraan yang didapatkan dari pengamatan melalui rekaman CCTV saat PPKM dan sebelum PPKM, jumlah kendaraan bermotor tahun 2017 dan 2019, koordinat CCTV, dan faktor emisi bahan bakar. Hasil menunjukkan bahwa Jalan A. Yani menyumbang emisi CO₂ terbesar yaitu 7.763,82 kg/jam sebelum pandemi, 5.5574,74 kg/jam saat pandemi (sebelum PPKM), dan 4.440,10 kg/ jam saat PPKM. Sementara itu Jalan Darmo memiliki emisi CO₂ terendah yaitu sebesar 629,75 kg/jam sebelum pandemi, 341,21 kg/jam saat pandemi (sebelum PPKM), dan sebesar 134,96 kg/jam ketika diterapkannya PPKM. Terdapat perbedaan antara emisi CO₂ kendaraan bermotor sebelum dan saat PPKM. Jalan Darmo memiliki rata-rata persentase penurunan terbesar yaitu sebesar 60,45%. Pemetaan distribusi spasial emisi CO₂ menunjukkan bahwa sebelum pandemi Surabaya bagian selatan didominasi nilai emisi sangat tinggi dan tinggi, sedangkan saat PPKM menjadi didominasi oleh nilai emisi rendah dan sangat rendah. Hal ini menunjukkan bahwa terdapat penurunan jumlah emisi CO₂ di Surabaya bagian selatan yang disebabkan oleh berkurangnya aktivitas kendaraan bermotor.

Kata kunci: Emisi CO₂, kendaraan bermotor, PPKM

STUDY OF MOTOR VEHICLES CO₂ EMISSIONS IN SOUTHERN SURABAYA BEFORE AND DURING THE IMPLEMENTATION OF PUBLIC ACTIVITY RESTRICTIONS POLICY (PPKM)

By:
Kamila Putri Hafizha

ABSTRACT

Surabaya is the city with the largest number of motor vehicles in East Java with an increase in the number of 2-wheeled vehicles by 7.03% every year. The faster the development of the transportation sector, the greater the CO₂ emissions produced. The COVID-19 pandemic has forced people to limit their outdoor activities. Surabaya is one of the cities in Indonesia that has implemented the policy of public activity restrictions (PPKM) to break the chain of the COVID-19 pandemic. This has an impact on community vehicle movement activities both within Surabaya and those entering the city area. This study aims to 1) calculate the amount of CO₂ emissions of motor vehicles in southern Surabaya, 2) analyze the effect of the PPKM on the amount of CO₂ emissions of motor vehicles in southern Surabaya, and 3) mapping the spatial distribution of motor vehicle CO₂ emissions in southern Surabaya before and during the PPKM. The data used is the number of vehicles that pass on the road which is obtained from observations through CCTV footage during PPKM and non-PPKM, the number of motorized vehicles in 2017 and 2019, CCTV coordinates, and fuel emission factors. The results shows that A. Yani Road contributed the largest CO₂ emissions 7,763.82 kg/hour before the pandemic, 5,5574.74 kg/hour during the pandemic (before PPKM), and 4,440.10 kg/hour during PPKM. Meanwhile, the lowest CO₂ emissions is in Darmo Road of 629.75 kg/hour before the pandemic, 341.21 kg/hour during the pandemic (before PPKM), and 134.96 kg/hour when PPKM was implemented. There is difference between the CO₂ emissions of motorized vehicles before and during PPKM. Darmo road has the largest CO₂ emission reduction percentage, which is 60,45%. The mapping of the spatial distribution of CO₂ emissions shows that before the pandemic, southern Surabaya was dominated by very high and high emission values, while during PPKM was dominated by low and very low emission values. This shows that there is a reduction in the amount of CO₂ emissions in southern Surabaya due to a decrease in the number of motorized vehicle.

Key words: CO₂ emissions, motor vehicles, PPKM