THE REAL URBAN EMISSIONS INITIATIVE

FACT SHEET

JUNE 2026

Assessment of real-world vehicle emissions in Bogotá, Colombia

BACKGROUND

Vehicle-related air pollution is a major challenge for the city of Bogotá, driven by high levels of particulate matter (PM), nitrogen oxide (NO_x), and carbon monoxide (CO). Poor air quality has been linked to approximately 100 in 100,000 deaths in the capital and has been found to increase emergency hospital visits for respiratory disease among children and the elderly.

Over the last few decades, substantial progress has been made to improve air quality in the capital. The city boasts one of the largest bus rapid transit networks worldwide, with ongoing efforts to replace diesel buses with lower- or zero-emitting alternatives. Bogotá's peak and plate (*pico y placa*) policy restricts vehicle travel by license plate letters every weekday to reduce congestion, while the Urban Zones for Better Air (*Zonas Urbanas por un Mejor Aire* [ZUMA]) initiative designates areas of the city to be prioritized for initiatives to reduce air pollution.

Although Colombia adopted Euro VI/6-equivalent emission standards in 2023 for heavy-duty vehicles as well as for light-duty vehicles fueled by diesel and compressed natural gas (CNG), gasoline light-duty vehicles are subject to less stringent Euro 4 emission standards.

To support policymakers in further improving urban air quality, TRUE Initiative conducted a real-world vehicle emissions study that aimed to:

- Provide a comprehensive picture of vehicle emissions in Bogotá.
- Identify evidence-based policy considerations based on real-world data to address high-emitting vehicles and accelerate the transition to lower-emitting and zero-emission vehicles.

CAMPAIGN STATS:

Testing schedule: September–October 2023

Sample: Approximately 250,000 measurements (98,000 valid for analysis)

Measured fleet: Passenger cars, taxis, light trucks, motorcycles, buses, microbuses, and heavy-duty vehicles

Pollutants analyzed:

- Carbon monoxide (CO)
- Hydrocarbons (HC)
- Nitrogen oxides (NO_x)
- UV smoke (a proxy for particulate matter)

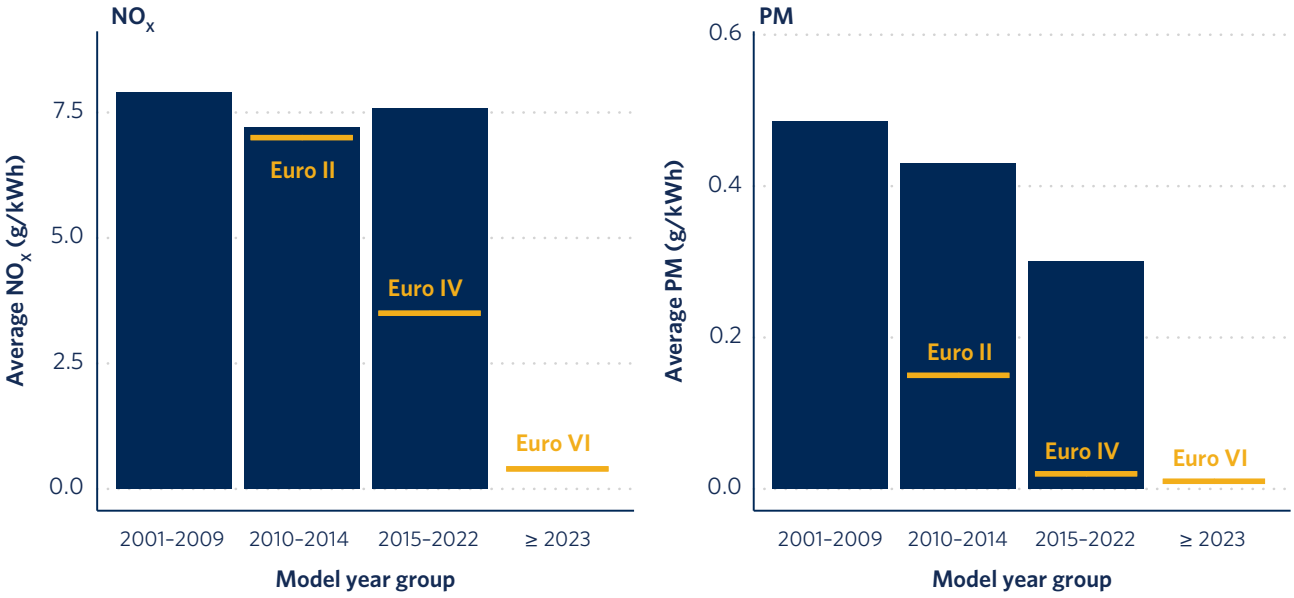
Partners: Vehicle registration data provided by the District Department of Environment of Bogotá (SDA); site selection guidance provided by the District Department of Mobility of Bogotá (SDM); TransMilenio coordinated the testing of buses; Opus Inspection conducted vehicle exhaust testing in partnership with Indra Colombia.

Photo caption: Remote sensing device setup in Bogotá, Colombia.

STRATEGIES TO REDUCE EMISSIONS

The analysis found that certain vehicle segments exhibiting high emission levels warrant targeted policy intervention. Specifically, the results support the following policy strategies to reduce vehicle emissions in Bogotá.

1. Improving inspection and maintenance programs would help address excess NO_x and PM emissions from key vehicle segments

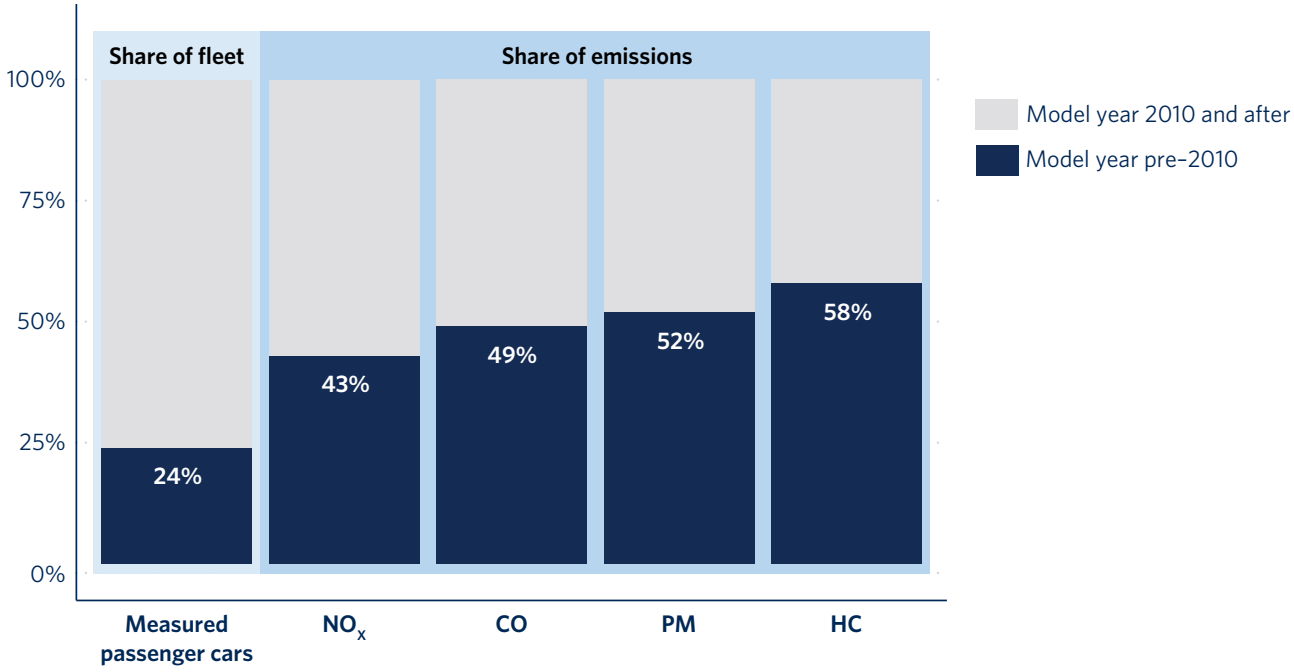


- Diesel vehicles showed little improvement in real-world NO_x with increasing emission standards, and diesel heavy-duty vehicles showed real-world PM emissions up to 15 times above the emissions limit.
- Taxis were found to emit up to 4 times more NO_x than private cars of the same model year, indicating accelerated emissions control system deterioration.

Policy implications:

- **Implementing remote sensing** to identify high-emitting diesel vehicles for maintenance would serve as a tool for market surveillance
- **Improving inspection and maintenance programs** for taxis, with a mandatory NO_x limit, would target the vehicle group responsible for a disproportionate amount of emissions compared with private passenger cars.

2. Targeting Bogotá's legacy fleet through existing and expanded regulatory policies can greatly reduce overall emissions in Bogotá



- Gasoline passenger cars manufactured before 2010 made up 24% of the measured gasoline passenger car fleet but contributed between 43%–58% of total emissions across all pollutants.

Policy implications:

- **Strengthening existing policies**—such as the *pico y placa* program and the ZUMA initiative piloted in the locality of Bosa-Apogeo—by progressively limiting the operation of pre-2010 vehicles can target the highest-emitting model years.
- **Pairing restrictions with rebate programs** would help support vehicle owners in transitioning to newer, lower-emitting models.
- **Adopting Euro 6 standards for gasoline cars**, with stricter NO_x emission limits and on-road testing, can help reduce real-world emissions from this vehicle segment.