

Limiting the emissions from imported second-hand vehicles in Warsaw

BACKGROUND

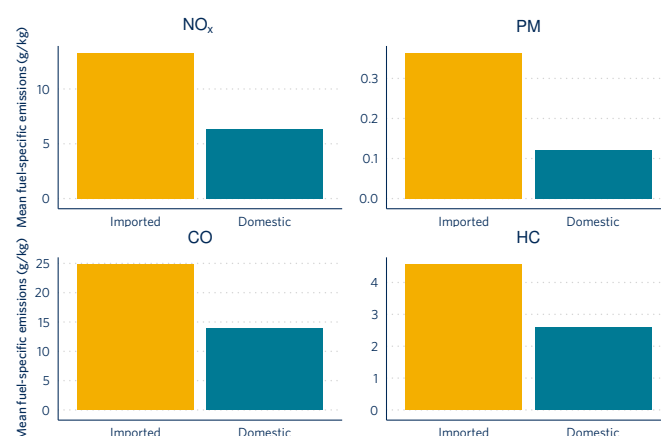
Poland is one of the biggest car importers in Europe. Many of these imported cars are second-hand vehicles, which provide an affordable mobility option to the residents in Warsaw. However, the importation of old second-hand vehicles, if not regulated, could increase the on-road emissions of the Polish fleet and worsen air quality problems. In 2019, twice as many second-hand vehicles were imported into Poland than new cars sold in the country. Most of these old vehicles are not allowed in many low-emission zones in Europe because they emit high levels of nitrogen oxide (NO_x) and particulate matter (PM) emissions detrimental to human health. Poland currently has no restrictions in place to regulate the emissions from these vehicles.

The TRUE Initiative collected over 220,000 remote sensing measurements in Warsaw in Fall 2020 to investigate the real-world emissions of the Warsaw fleet. Nearly a third of the light-duty vehicles measured were imported second-hand vehicles. The data allow for a detailed assessment of nitrogen oxide (NO_x), particulate matter (PM), carbon monoxide (CO), and hydrocarbons

(HC) emissions from imported second-hand vehicles. This assessment provides evidence to support actions Warsaw can take to limit these emissions.

KEY FINDINGS

- Imported second-hand vehicles (ISVs) made up 32% of the light-duty vehicles measured in Warsaw. Compared with domestic light-duty vehicles, ISVs were found to be older and have higher mileages. The average age and mileage of ISVs are 13 years and 223,000 km, while those of domestic vehicles were 6 years and 144,000 km.
- The average NO_x and PM emissions from ISVs were more than double and triple those from domestic vehicles, respectively. Both petrol and diesel ISVs showed consistently higher NO_x and PM emissions than domestic vehicles of the same fuel type. This is largely because ISVs had higher shares of diesel vehicles of ages above 15 years and petrol vehicles of ages above 20 years, which had among the highest average emissions in Warsaw. The highest average emissions were found to be from vehicles over 20



Distribution of ages and mileages (left panel) and average fuel-specific NO_x, PM, CO, and HC emissions (right panel) of domestic and imported vehicles measured in Warsaw in 2020. Vertical lines (left panel) indicate the average ages and mileages of the two vehicle groups.

years old, which accounted for less than 2% of domestic vehicle measurements but over 10% of imported vehicle measurements.

- The average fuel-specific CO and HC emissions from ISVs were found to be nearly double those from domestic vehicles. This is also attributable to the higher share of the highest-emitting petrol vehicles of over age 20 in the imported vehicle group. The average CO and HC emissions by age showed little discrepancies between imported and domestic vehicles.
- In the absence of nation-wide policies restricting the importation of old, polluting vehicles, such as age limits, Warsaw could take steps to address this problem with a clean transportation zone. A clean transportation zone that restricts the use of vehicles certified to Euro 3 or below would apply to vehicles over 16 years old, most of which are imported and responsible for the highest emissions in Warsaw. Excluding these vehicles from the zone would yield average emissions reductions of 20%–40% from the imported second-hand fleet for all pollutants studied.



TO FIND OUT MORE

For details on the Warsaw remote-sensing project and related questions, contact Yoann Bernard, y.bernard@theicct.org.

For more information on TRUE, visit www.trueinitiative.org