

# Where do our discarded diesel vehicles go?

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## Introduction

### EUROPE

Europe once held a 55% global diesel market. However, after 'Dieselgate', millions of cars exceed NOx emission standards. These cars are either retrofitted or discarded in other parts of the world.

### AFRICA

Africa makes up 40% of the world's used car market; 85% of the continent's fleet is made up of old cars. But because there are no import restrictions, secondhand cars of poor quality have polluted Africa.

## Objective

This project tracks the destiny of abandoned diesel automobiles from Europe and US and evaluates how they affect air quality, climate change, and human health in African nations.

The study's scope covers three specific components of the trade flow for used diesel cars:

1. The principal exporting and importing nations;
2. Rules for importing used cars into each African nation;
3. Calculated exhaust emissions from used diesel cars imported from abroad.

Classification	Propulsion type	Europe
road tractors for semi-trailers	compression-ignition internal combustion piston engine	87 01 21 90
	compression-ignition internal combustion piston and electric motor	87 01 22 90
motor vehicles, transport of persons ≥10	compression-ignition internal combustion piston engine	87 02 10 19 87 02 10 99
	only compression-ignition internal combustion piston engine	87 03 31 90 87 03 32 90 87 03 33 90
motor vehicles, transport of persons <10	compression-ignition internal combustion piston and electric motor	NA
	only compression-ignition internal combustion piston engine	87 04 21 39 87 04 21 99 87 04 22 39 87 04 23 39
motor vehicles, transport of goods	compression-ignition internal combustion piston and electric motor	87 04 41 39 87 04 41 99 87 04 42 99 87 04 43 99
	only compression-ignition internal combustion piston engine	87 04 41 39 87 04 41 99 87 04 42 99 87 04 43 99

### METHODOLOGY

Step 1: choose HS headers that are relevant to the research topic. Customs use the HS code to record international trade. (see above table, data source: Eurostat database)

Step 2: trade analysis---performing statistical analysis based on attributes like importer and exporter, trade quantity, year, and type.

Step 3: environmental analysis---determine the connection between rules and environmental pollutants.

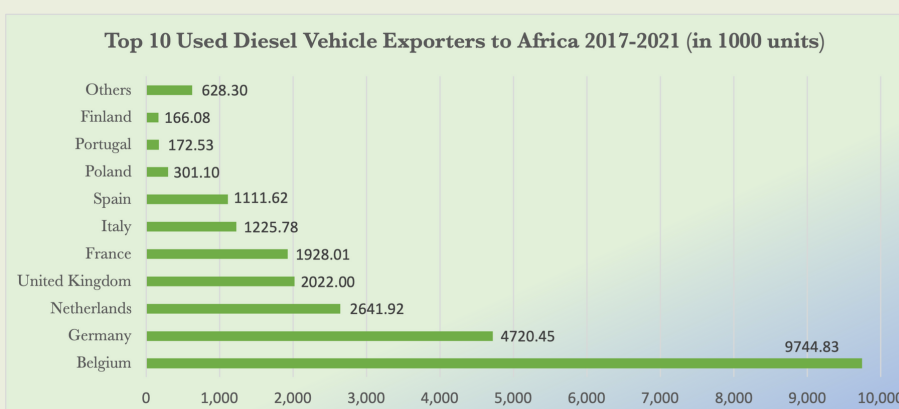
## Findings

1. The entire trade flow of discarded diesel vehicles from Europe and the US to Africa has been growing steadily over the past five years, with a little decline in 2020, primarily because of the influence of the Covid-19 outbreak on the world trading system.

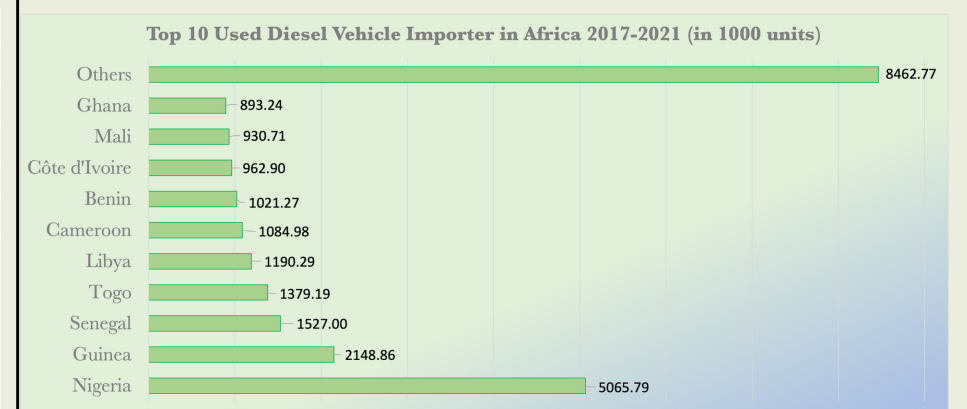
2. For exporters, Belgium and Germany are on the top of the list because of their roles as major automakers in Europe. They're most harmed by newly enacted limits on pollution. In 2018 alone, 12.3 million diesel automobiles fail to reach the standard, these cars are either retrofitted or discarded in developing countries like Africa.

3. For importers, Nigeria with a 20% share ranked top of the list, mainly due to its vast population and low national GDP. Strong demand in most countries is due to difficulty in producing automobiles domestically and the inability to pay for new imports. (see table below) Therefore, rather than outright banning imported cars, the focus should be on raising used vehicles' quality.

Vehicles from former colonial powers are preferred by countries. With the exception of Nigeria, British imports made up more than 95% of all imports in the former British colonies in Africa. In all the former French colonies, France ranked Top 5 importers.



Country	GNI Status	% of region imports
Nigeria	Low-middle income	20.54%
Guinea	Low-income	8.71%
Senegal	Low-middle income	6.19%
Togo	Low-income	5.59%
Libya	Upper-middle income	4.83%
Cameroon	Low-middle income	4.40%
Benin	Low-middle income	4.14%
Côte d'Ivoire	Low-middle income	3.90%
Mali	Low-income	3.77%
Ghana	Low-middle income	3.62%



## Regulations & Emissions

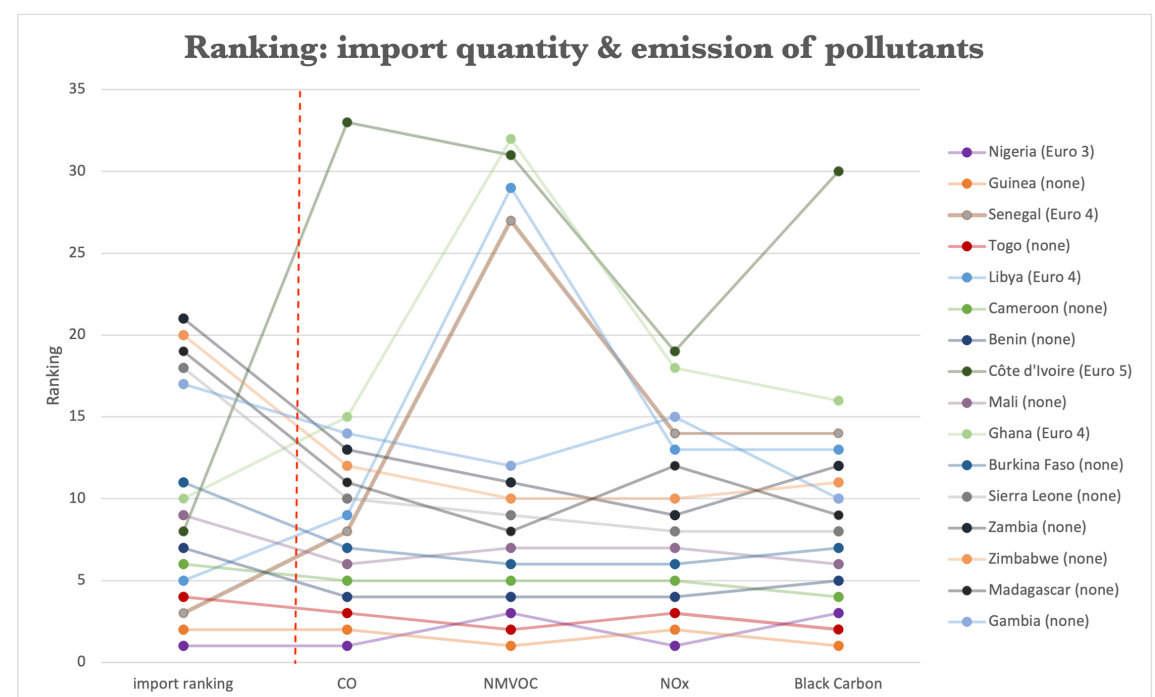
65% of the 54 African countries evaluated by UNEP have "veryweak" import prohibitions. The successive column series in the right-hand graph correspond to each country's rating for environmental pollutants, with the first column series representing import quantity rankings as the starting point. According to the graph, there is a strong negative relationship between intense import regulations and environmental harm.

$$E_{ij} = \sum_k (N_{j,k} \times M_{j,k} \times EF_{i,j,k})$$

N: number of vehicles (data from Eurostat using HS code)

M: average annual distance driven, NA, take as constant

EF: emission factor for pollution from European Environment Agency



## Recommendations

1. Establish a uniform international vehicle standard.
2. Concentrate on refining/adopting import laws to improve the quality of imported used diesel automobiles. Measures include age limitations, Emission pollutant requirements, implementation of fiscal instruments and introduction of hybrid electric vehicles.
3. Introducing new, eco-friendly fuel that is compatible with imported cars.