Press release

Four truck makers linked to 307,000 deaths and over USD 1.4 trillion in health costs from diesel pollution

New data reveals severe health and economic impacts of diesel truck emissions as top truck manufacturers stall truck electrification

HELSINKI, 25 March 2025 - A groundbreaking report reveals diesel pollution produced by trucks from four major manufacturers—Daimler Truck, Traton, Volvo Group, and Paccar—has been linked to **307,000 deaths and more than USD 1.4 trillion** in global health costs, according to the Centre for Research on Energy and Clean Air (CREA).

The report, *Heavy-Duty Harm*, finds that these industry leaders — which own 39% of the global market — fuel a silent public health crisis. The report makes the case for urgent truck electrification as it analyzes the link between emissions from almost 8 million diesel trucks sold by these companies between 2014 and 2023 and health impacts. It has found that the pollution emitted during the lifetime of these trucks is estimated to contribute to tens of thousands of cases of asthma, heart disease, premature births, and preventable deaths, imposing huge costs on individuals, businesses, and healthcare systems.

Children are among the worst affected — Daimler trucks alone account for the largest share of childhood asthma cases and emergency room visits due to its significant fleet emissions. The majority of the air pollution's health impacts on newborn health also stems from Daimler. This manufacturer contributes to 36,600 preterm births and 30,800 underweight births. Traton is the second-largest contributor to childhood asthma cases and emergency room visits, with emissions driving substantial respiratory health burdens.

Despite making up just 3% of vehicles on the road[1], heavy-duty trucks emit 30% of all road transport carbon dioxide and 86% of on-road nitrogen oxide (NO_x) emissions[2] — one of the most harmful pollutants from diesel trucks. The four big manufacturers have made commitments to decarbonize the industry by building zero-emission trucks but by the end of 2024, less than 2%[3] of trucks were electric, with some manufacturers still below 1%[4]. As a result, emissions from these companies will continue to fuel a public health crisis and impose massive economic costs for decades to come.

"Truck pollution is an invisible crisis—harming public health, slowing economic productivity, and deepening environmental injustice," said CREA Air Quality Analyst Dr Jamie Kelly. *"The trucking industry is stalling progress while people are paying the price with their health. Electrifying trucks is not just about climate—it's about saving lives and protecting the economy."*

At this pace, commercial trucks are set to become the largest source of transport-related air pollution (CO_2 emissions) globally, surpassing passenger cars.[5] The report makes it clear: transitioning to trucks that have no tailpipe emissions is essential to saving lives and reducing economic damage.

The health and economic impacts of inaction by truck makers are staggering (see also Annex). The estimated USD 1.4 trillion in damages from diesel truck emissions far exceeds the estimated cost of deployment of electric charging infrastructure[6]:

- US: USD 66 billion would support 1.4 million electric trucks by 2032.
- Europe: EUR 40 billion would support large-scale electrification by 2040.

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[1] BNEF EVO, 2024
[2] BNEF EVO, 2024; Statista, 2023a, 2023b; NRDC, 2022; ICCT, 2021
[3] BNEF EVO, 2024
[4] Fleet Equipment, 2024
[5] BloombergNEF's Zero-Emission Commercial Vehicles: The Time Is Now
[6] ICCT, 2024; McKinsey, 2024b

Key findings:

Air pollution impact

The report finds that diesel trucks from just these four manufacturers sold in a period of only 10 years will emit **6,466 kilotons of NO_x** over their lifetime (2014-2040)[7], which is equivalent to:

- 60 years of Sweden's NO_x emissions
- 8 years of Germany's NO_x emissions (Traton and Daimler's HQ countries)
- 30 years of UK's NO_x emissions from road transport
- 10 years of USA's NO_x emissions from highway vehicles (Paccar's HQ country)

Daimler and Paccar are the biggest NO_x polluters, with 2,053 and 1,677 kilotons, respectively.

Health impact

The consequences of diesel truck pollution extend far beyond the environment. NO_x emissions from trucks are linked to:

- **307,000 deaths worldwide**
- **217,000 new cases of childhood asthma**, plus **321,000 emergency hospital visits** for asthma attacks
- **88,000 preterm births** and **62,000 underweight births**

Air pollution-related deaths linked to emissions from top manufacturers come to:

- Traton: 100,000 deaths
- Daimler: 87,800 deaths
- Volvo: 75,400 deaths
- Paccar: 42,900 deaths

Regionally, Daimler's highest contribution to deaths occurs in Asia (60,700 deaths). In contrast, Paccar, Traton, and Volvo have their largest death contributions in Europe, with 28,500, 62,800, and 31,700 deaths, respectively.

[7] The report analyzes the impact of 7.9 million medium and heavy-duty truck emissions (over 7.5 tons) sold collectively by these manufacturers over the past decade (2014–2023), considering both past emissions and projected future pollution based on typical vehicle lifespans (2014–2040).

Economic burden
The economic burden of truck pollution is immense. Emissions from trucks sold between 2014–2023 will cost the global economy USD 1.4 trillion through 2040, exceeding the GDP of Poland (USD 800 billion).

This includes:

- Loss of workforce productivity – **120 million missed workdays** due to respiratory illnesses and other pollution-related health problems. These absences represent lost productivity, disrupted workflows, and reduced economic output across multiple sectors.
- Higher healthcare costs – from treating asthma, lung disease, and heart conditions.
- Death and disability – years of lost economic productivity due to chronic diseases and death.

Biggest economic offenders:

- Traton: USD 416 billion
- Daimler: USD 326 billion
- Paccar: USD 321 billion
- Volvo: USD 304 billion

Additionally, the economic burden is unevenly distributed across regions. North America bears the highest costs from Daimler and Paccar, while Europe sees the largest economic damage from Traton and Volvo. Asia, while contributing lower absolute costs, accounts for a significant share of Traton's and Volvo's impacts due to their market presence in emerging economies.

CREA's findings highlight the urgent need for:

- a zero-emission truck sale mandate by 2040;
- terminating investments in polluting alternatives like biofuels & hydrogen combustion;
- prioritizing electrification in all markets, not just wealthy markets.

Read the full report, *Heavy-Duty Harm: A global analysis of the health and economic impacts of emissions from major truck manufacturers: Daimler, Traton, Volvo, and Paccar*, here.

About CREA

The Centre for Research on Energy and Clean Air (CREA) is an independent research organisation focused on revealing the trends, causes, and health impacts, as well as the solutions, to air pollution. CREA was founded in December 2019 in Helsinki and has staff in several Asian and European countries. The organisation's work is funded through philanthropic grants and revenue from commissioned research.
www.energyandcleanair.org

About the methodology

This study quantifies the health and economic impacts of NO_x emissions from diesel trucks produced by Daimler, Traton, Volvo, and Paccar. Emissions were estimated using truck sales data (2012–2023), regional emission factors, and vehicle lifetime assumptions.

Air pollution modeling was conducted using Harvard's GEOS-Chem model to assess the transformation of NO_x into harmful pollutants (NO_2, PM_2.5, and O_3). Health impacts, including deaths and asthma cases, were estimated using CREA's health impact assessment (HIA) framework, based on peer-reviewed epidemiological research.

Economic costs were calculated using established methods for valuing healthcare expenses, lost productivity, and mortality. The study estimates that these truck emissions will cause more than 300,000 deaths and over USD 1.4 trillion in global economic losses by 2040.

Full details of the methodology used in this study are provided in the report.

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Note to editors

The publication related to this press release can be found here.
All CREA publications can be found here:
energyandcleanair.org/publications

Annex

Impacts of NO_x emissions from Daimler, Traton, Volvo, and Paccar trucks sold in the last decade (2014–2023) on public health and the economy from 2014–2040

Health outcome	Central estimate (range)
Preterm births	88,000 (42,000–93,000)
Underweight births	62,000 (19,000–108,000)
Asthma emergency room visits	321,000 (195,000–425,000)
New cases of asthma in children	217,000 (50,000–469,000)
Years lived with disability (COPD)	128,000 (28,000 – 267,000)
Years lived with disability (stroke)	117,000 (19,000 – 275,000)
Years lived with disability (diabetes)	87,000 (42,000 – 160,000)
Work absences (sick days)	120,000,000 (103,000,000–139,000,000)
Deaths	307,000 (187,000–494,000)
Economic cost (USD trillion)	1.4 (0.9–2.1)