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DECARBONISING URBAN LOGISTICS

COST & BENEFIT ANALYSIS OF THE DUTCH ZERO-EMISSION ZONES FOR FREIGHT

July, 2026

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ZERO EMISSION ZONES FOR FREIGHT: THE DUTCH CONTEXT

What is a ZEZ? Designated area where, over time, only **zero-emission vehicles** as well as **walking** and **cycling** are permitted.

These zones focus on **freight transport** due to its high mileage and therefore **disproportionate contribution** to emissions and congestion.

The Netherlands is a frontrunner of the **zero-emission zones for freight (ZEZ-F)**, the first of their kind in Europe. Since January 2025, Dutch municipalities have begun their roll-out.

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20 CITIES INTRODUCED A ZEZ-F SO FAR, 9 MORE PLANNED

1. Almere
2. Alphen a/d Rijn
3. Amersfoort
4. Amsterdam
5. Apeldoorn
6. Arnhem
7. Assen
8. Breda
9. Delft
10. Den Haag
11. Deventer
12. Dordrecht
13. Ede
14. Eindhoven
15. Enschede
16. Gouda
17. Groningen
18. Haarlem
19. Leiden
20. Maastricht
21. Nijmegen
22. Rotterdam
23. 's-Hertogenbosch
24. Schiphol
25. Tilburg
26. Utrecht
27. Venlo
28. Zaanstad
29. Zwolle

The zones are a result of a **joint effort** of the national government, municipalities, the private sector and civil society.

They were first announced in **2019** and kicked-off in **2025**.

All **newly registered vehicles** entering the zones are required to be emission-free.

For the legacy fleet, **transition periods** apply.

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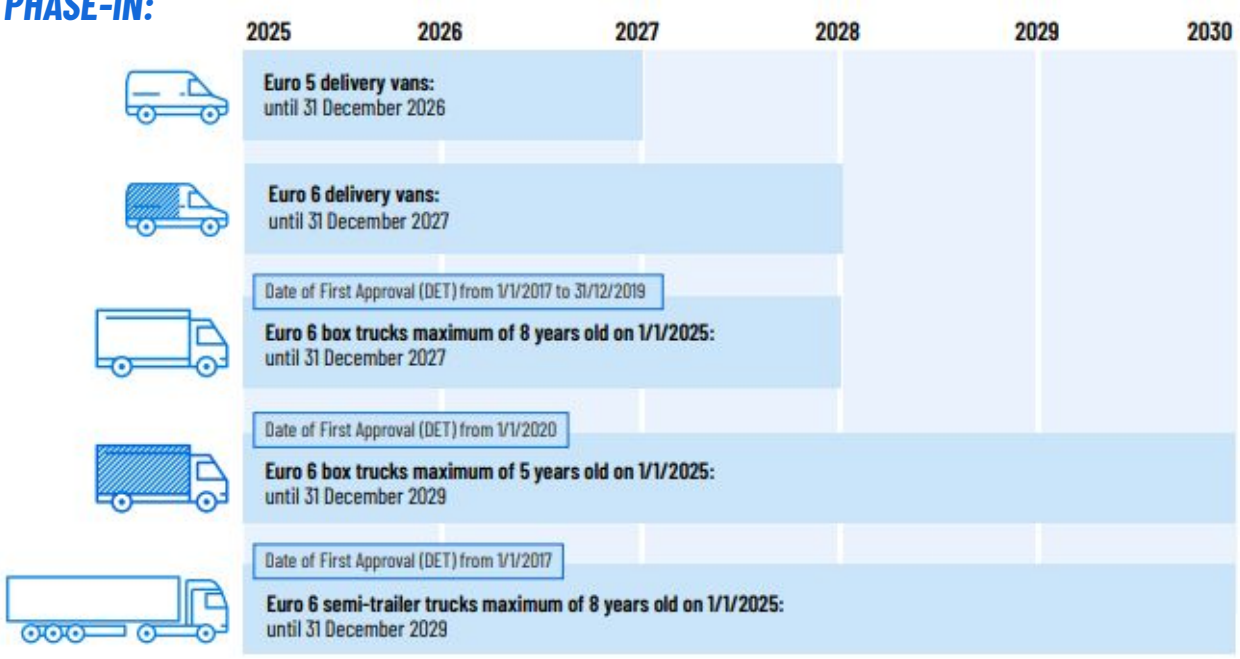
LONG LEAD-IN TIME AND A GRADUAL PHASE IN

FROM EARLY COVENANT TO GRADUAL PHASE-IN:

2014 — **GREEN DEAL ZERO-EMISSION URBAN LOGISTICS**
Covenant signed by institutions & businesses to accelerate more sustainable urban logistics

2019 — **NATIONAL CLIMATE AGREEMENT**
Including a commitment to zero-emission zones for vans and trucks in 30-40 larger municipalities from 2025

2021 — **IMPLEMENTATION AGENDA URBAN LOGISTICS**
Setting the framework for ZEZ-F rollout



NB: A government-proposed extension would allow Euro 6 vans access until 1 January 2029, a year longer than the initially planned 1 January 2028 deadline.

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NATIONAL COST-BENEFIT ANALYSIS: WHAT THE DATA SHOWS

In 2019, Buck Consultants International and Haskoning developed a method of **estimating costs and benefits** of the zero-emission zones for freight (ZEZ-F).

In 2025, the Ministry of Water and Infrastructure commissioned an update of this study.

This slide deck translates and summarizes the resulting 2025 Cost & Benefit Analysis for an international audience.

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COST-BENEFIT ANALYSIS: INTRODUCTION & METHODOLOGY

COSTS:

To **public authorities & businesses**

Using **annual urban logistics kilometres** and an estimate of **trips replaced** by electric driving, the **km replaced by electric driving** is calculated

Cost for business, the **kilometers replaced,** are represented by the **difference in total ownership costs** of electric vs. fossil fuel vehicles. This is minor for vans, but higher for less commonly electrified vehicles

BENEFITS:

Clean air and carbon savings for years 2025-2050, monetized with the most recent Environmental Handbook prices

Savings are calculated by multiplying fossil fuel **kilometres replaced** with electric driving every year by their environmental price

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TOTAL COSTS EQUAL €401M, BORNE BY THE DUTCH GOVERNMENT, MUNICIPALITIES & VEHICLE USERS

MUNICIPAL COSTS

€154M

Implementation: Cameras and project management

Operations: Enforcement, management, and depreciation

VEHICLE COSTS

€221M

Extra cost of electric vehicles:

Total costs of ownership (TCO) difference × total kilometres driven electrically

NATIONAL COSTS

€26M

3 FTE **ministerial policy staff**

National expert pool & Central service desk

Public communication initiatives

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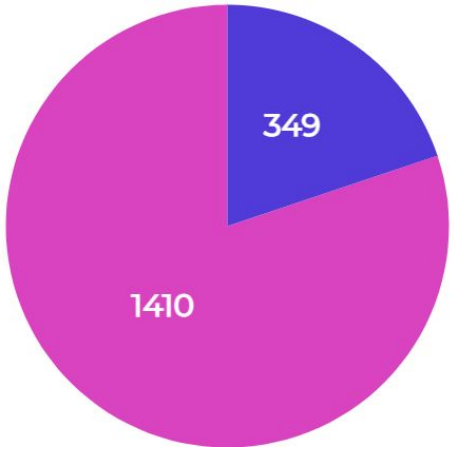
BENEFITS ADD UP TO €1.8B, DOMINATED BY CO_2 REDUCTION

CO_2 REDUCTION

€1.4B

Total reduction by 2030 is 550,000 tons



AIR QUALITY BENEFITS

€349M

Specifically preventing: 977t of NO_2, 15t of $PM_{2.5}$ and PM_{10}, 7.8t of soot

Zones in bigger cities, Amsterdam and Rotterdam, drive **47%** of the total CO_2 reduction.

Total CO_2 reduction, 0.55 Mt by 2030 is **lower** than the **1.0 Mt** originally targeted in the 2019 National Climate Agreement, due to fewer participating municipalities and smaller zone areas.

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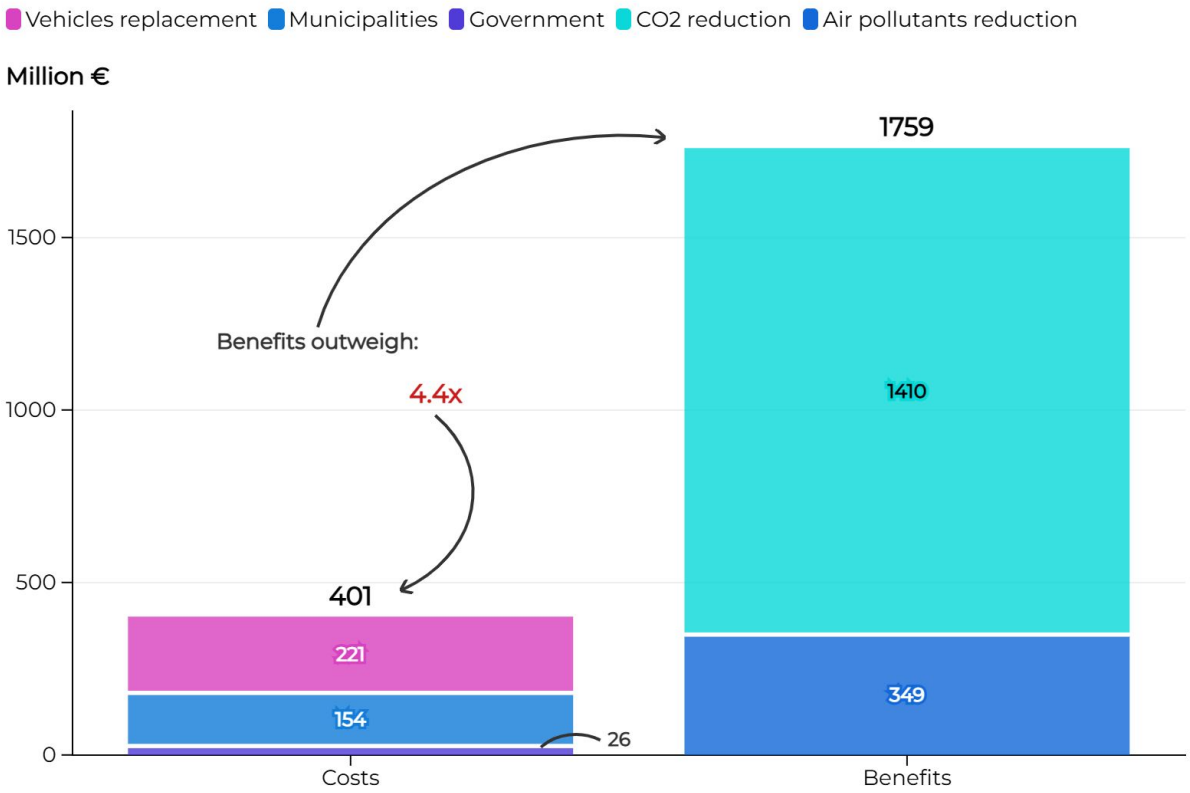
BENEFITS OF THE ZONES OUTWEIGH THE COSTS BY A FACTOR OF 4.4



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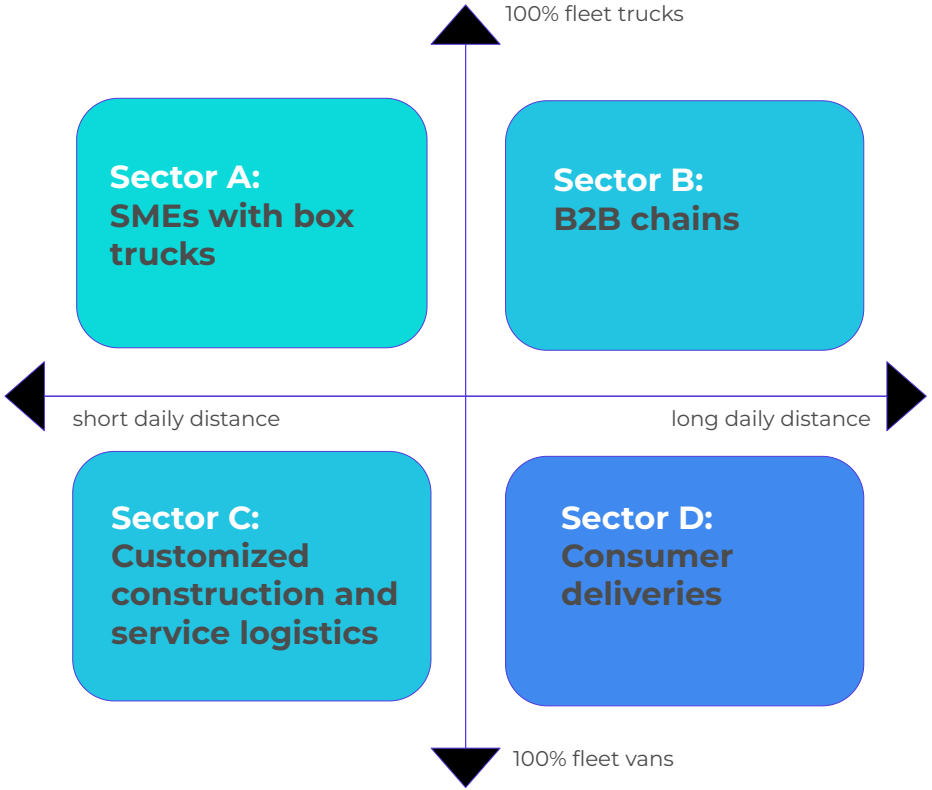
COSTS ARE LOWEST WITH A HIGH SHARE OF VANS IN THE FLEET AND HIGH MILEAGE

Electric vehicles are the **cheapest** when **driven frequently**, because of comparatively lower fuel cost to diesel.

Electric van models are also more available than trucks. Businesses with **regular van driving**, like parcel delivery, hence face **lower costs** of fleet electrification.

Lower **annual mileage** and **greater use of trucks**, on the other hand, are associated with **higher costs**. Businesses with trucks driving shorter distances, are disproportionately affected.



ANALYSIS OF USE CASES

Description of use	Sector A	Sector B	Sector C	Sector D
Key features	**SMEs with box trucks** Trucks, short daily distances	**B2B chains** Trucks, long daily distances	**Customized construction and service logistics** Vans, short daily distances	**Consumer deliveries** Vans, long daily distances
Images for illustrative purposes				
Examples	Market vendors, deliveries moving services	Supermarket restocking Retail chains (non-food)	Light construction logistics Maintenance and installation Facility services	Mail and parcels, home delivery B2C (groceries and meals)
Cost burden	Relatively high additional costs, but a relatively small group in terms of size	Low additional costs compared to other trucks	Only (low) additional costs for used vehicles	No additional costs

CLEAN CITIES RESEARCH: IMPACT ON ELECTRIFICATION

In 2025, we showed that the Netherlands is leading Europe in electrifying freight.

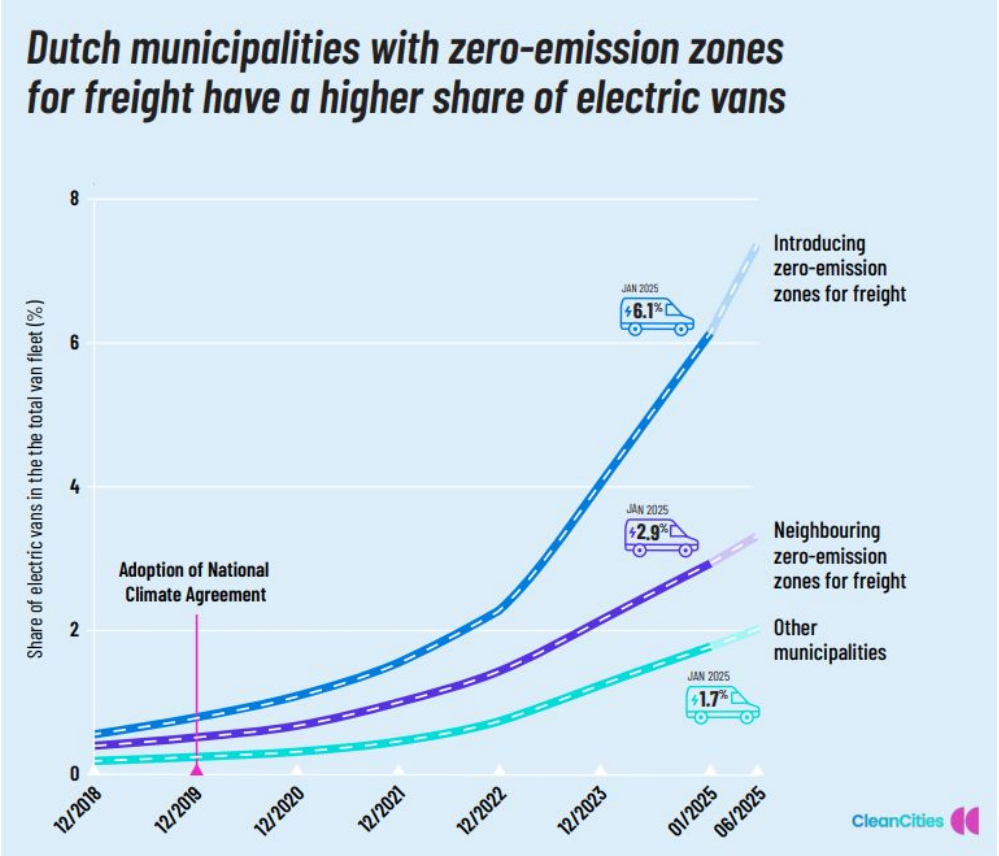
Cities that have committed to ZEZ-F by 2030 already show **faster adoption of electric vans**.

In the first half of 2026, 83.7% of newly registered vans in the Netherlands were battery-electric - far above the EU average of 13%.

THE ZONES ACCELERATE ELECTRIC VEHICLE UPTAKE

Clear regulations and a sufficient lead time ensured **high business compliance** (99% of vans and trucks entering the zone adhere to the regulation) and so **accelerated electrification.**

By January 2025, municipalities with a ZEZ-F plan reached an average share of **6.1%** electric vans in the van fleet, compared with just **1.7%** in municipalities without any plans.



ELECTRIC VEHICLES MORE AFFORDABLE EVERY YEAR...

... BUT THE COST OF TRANSITION IS DISPROPORTIONATE FOR SOME BUSINESSES.

Decarbonising the fleet is disproportionately harder on SMEs, whereas for bigger companies decarbonisation offers financial savings.

EFFECTIVE POLICIES NEED TO TARGET LARGER FLEETS FIRST...

Business owners with (relatively old) vehicles and low annual mileage bear a relatively large share of the associated costs. Large chains bear relatively few costs for both trucks and delivery vans.

... AS WELL AS FREQUENTLY DRIVING VEHICLES.

"...my advice to other businesses is: get started, and look carefully at the total cost per kilometre — you'll find electric really is more economical than diesel."

Weverling Groenproviders, a landscaping company

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OTHER EUROPEAN COUNTRIES FOLLOW SUIT

The Netherlands is a frontrunner, but zero-emission zones are spreading:

- **Brussels** a ZEZ is planned by 2035
- **Paris:** City Council voted for zero-emission zone for freight trial in 2024
- **Denmark:** a new law allows cities to introduce zones, Copenhagen is working on the first one
- **Stockholm:** official plan adopted, slowed down by court case
- **Norway:** government working on legislation on ZEZs

ANNEX: METHODOLOGICAL REMARKS

For the detailed calculation of costs and benefits, please refer to the original publication, the appendix on CBA and the appendix on Sector analysis. This CBA build on the Archetype Study (2019), which developed a methodology to assess the effects of introducing zero-emission zones based on a several Dutch cities. This methodology is now applied to all municipalities with a ZEZ-F.

Throughout the CBA, monetary values are discounted back to the base year, 2024 to control for inflation.

The most recent environmental prices from the Environmental Prices Handbook (CE Delft, 2023). Based on the 2021 price level, converted to the 2024 price level.

The CBA does not consider the beneficial effects on noise, congestion, and safety, nor the costs associated with possible detours or the competitive disadvantage for business.

In this analysis, TCOs are always disadvantageous for electric vehicles, although some evidence suggests that electric commercial vehicles are already price-competitive and will become even cheaper to operate in the future. This analysis therefore assumes a conservative cost perspective.

Further information:

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