








## CIVITAS indicators

Share of electric/hydrogen road freight vehicles (ENV\_DC\_AFV2)

### DOMAIN

				
Transport	Environment	Energy	Society	Economy

### TOPIC

Decarbonisation

### IMPACT

Zero-emission vehicles

*Increasing the share of zero-emissions freight vehicles*

ENV\_DC

### Category

Key indicator	Supplementary indicator	State indicator
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## CONTEXT AND RELEVANCE

Transport activity is a major contributor to pollution, significantly impacting air quality, human health, and climate change. A substantial portion of freight transport activity takes place in urban areas, where high population density and concentrated economic activity lead to high freight demand. The reliance on motorized vehicles powered by fossil fuels exacerbates climate change by emitting greenhouse gases, such as CO<sub>2</sub>. By addressing urban freight transport emissions, cities can enhance air quality and reduce carbon footprints.

This indicator is an estimation of the share of zero-emissions (electric and hydrogen) freight vehicles among the freight vehicles registered in the pilot city. **It is a relevant indicator when the policy action is aimed at reducing the impact of urban mobility and transport on climate. A successful action is reflected in a HIGHER value of the indicator.** Since there is limited correlation between the place where a commercial vehicle is registered and where it is used, this indicator can be meaningful when the pilot area is a whole city but is insignificant when the pilot area is just part of an urban area.

## DESCRIPTION

The indicator is the share of Battery Electric Vehicles (BEV) and Fuel Cells Vehicles (FCEV) for freight transport out of the total freight vehicles registered in the pilot city. Being a share, the indicator is **dimensionless**.

## METHOD OF CALCULATION AND INPUTS

This indicator's method of calculation consists of computing the share of freight BEVs and FCEVs using **vehicle registration data**. **The requirement for its application is that data on vehicle registrations is available at the required spatial and temporal level of detail.** Data on vehicle registration may be published only at a level of spatial aggregation coarser than the pilot area (e.g., NUTS3 regions) and for one period (e.g., at the end of the year). This issue may be especially relevant if the pilot is expected to last less than one year.

**The indicator should be computed exogenously**, by applying the method described and then coded in the supporting tool.

### Method

**Calculation of the share of zero-emission freight vehicles using registration data**

Significance: **0.75**



**The following information is needed** to compute the indicator:

- a) **The number of commercial vehicles** registered in the pilot area **by fuel technology** at the latest available date

The experiment would result in a modification of the share of fuel technologies in the registered commercial vehicles.

### METHOD OF CALCULATION

The indicator should be computed **exogenously** according to the following steps:

- **Retrieval of the number of registered commercial vehicles in the pilot area** at the latest available date and classified according to fuel technology.
- **Estimation of the indicator** (see the following equation).

## EQUATIONS

The value of the indicator should be computed as:

$$ZrEmTruckSh = \frac{RegTruck^{<BEV>} + RegTruck^{<FCEV>}}{\sum_f RegTruck^f}$$

Where:

$RegTruck^f$  = Number of commercial vehicles registered in the pilot city with fuel technology  $f$

$RegTruck^{<BEV>}$  = Number of Battery Electric commercial vehicles registered in the pilot city

$RegTruck^{<FCEV>}$  = Number of Fuel Cells commercial vehicles registered in the pilot city

## ALTERNATIVE INDICATORS

This indicator captures the overall penetration of zero-emission vehicles in the commercial vehicle fleet. However, it does not reflect the pace at which zero-emission vehicles are entering the fleet. This latter aspect is measured by the indicator **ENV\_DC\_AFV1**, which has the same form but is computed based **on new registrations** of commercial vehicles rather than the total existing fleet. When assessing short-term pilots, it may be more insightful to consider only new registrations, as this approach allows for a clearer evaluation of the intervention's immediate effects on vehicle acquisition choices.

While this indicator considers freight vehicles, ENV\_DC\_APV1 and ENV\_DC\_APV2 illustrate the share of zero-emission **passenger vehicles** among newly registered cars and over the whole car fleet, respectively.