

evs | 27

The 27th **INTERNATIONAL
ELECTRIC VEHICLE
SYMPOSIUM & EXHIBITION.**

Barcelona, Spain
17th-20th November 2013

Promotion of Electric Freight Mobility in Milan

*Pietro Menga
President CEI-CIVES*



*CEI-CIVES - Commissione Italiana Veicoli Elettrici Stradali
Italian AVERE Section*

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Milan today

- *Population: 1.240.000 , surface 182 sqkm*
- *Number of cars: 716.000 (0.55 car per capita, UE average is 0.45)*
- *Average car trips in the town: 4 km*
- *PM10 daily limit of 50 $\mu\text{g}/\text{m}^3$ exceeded 120 times in 2011*

Goals of interventions on mobility

- *Reduce cars and surface occupancy, increase public transport lanes*
- *Improve local air quality*
- *Contribute to national energy and environmental policy*



Interventions implemented or in progress

- *Traffic restriction zone in inner part of city (“Area C”)
Daily fee, pre-Euro4 forbidden: reduction of 32% of traffic and pollution,
12% increase of “clean” vehicles (hybrid, CNG, LPG, electric)*
- *Exemption of Area C fee for EVs and (temporarily) for HEVs*
- *Free parking in pay parking areas over entire town*
- *Car2Go car-sharing scheme (goal 600 to 2000 cars)
(free municipality concession for EV operators)*
- *Bike and Quadricycle sharing (including electric)*
- *Concession of EV recharging stations licence at very favourable conditions
(business model service provider in competition)*
- *Participation in UE Project FR-EVUE
(last mile distribution of medicines to municipal pharmacies with EVs)*





Evaluation of further interventions

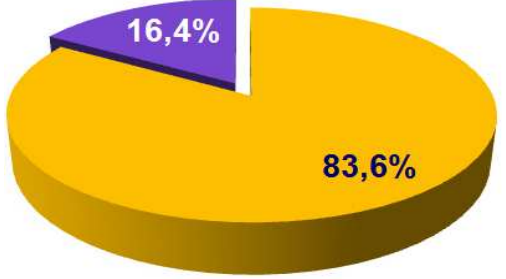
- *Evaluation of how effective can be a policy addressed to last-mile goods delivery with EVs, in respect to other options (individual cars, two-wheelers)*
- *Evaluation of present i.c.e. fleets (case of Area C) based on:*
 - ✓ *Local and greenhouse emissions*
 - ✓ *Primary energy consumption*
 - ✓ *Monetary impact of externalities at national level*
 - ✓ *Economics for the vehicle user*
- *Evaluation of the impact of the introduction of EVs , based on the same indicators*



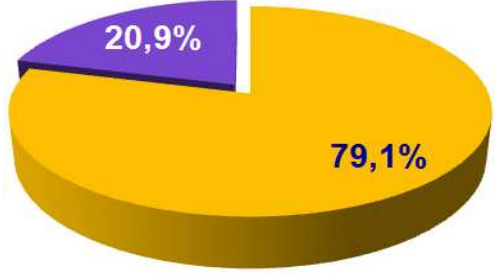
Area C

cars vans

Percentage of Vehicles

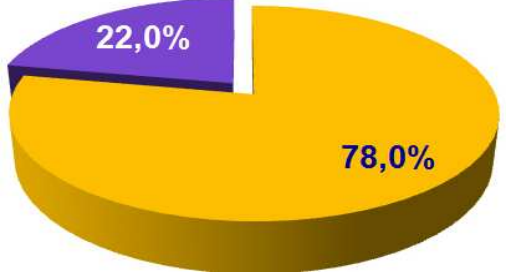


Daily Mileage

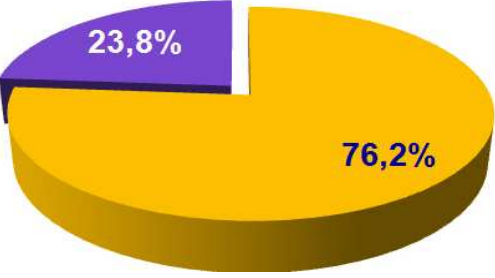


Actual i.c.e. Vehicles

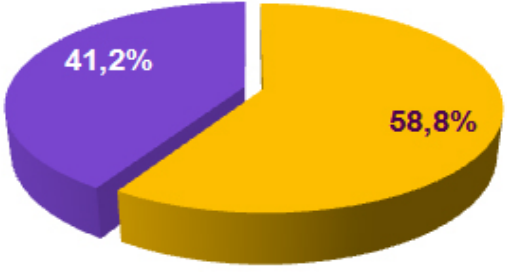
Primary Energy



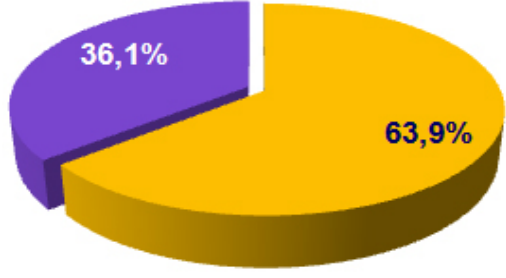
CO2 Emissions



NOx Emissions



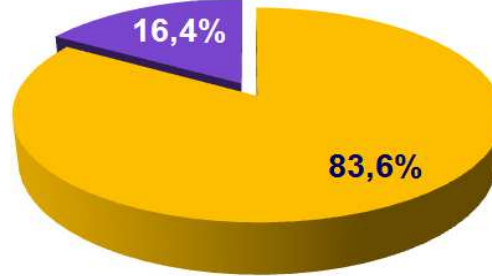
PM Emissions



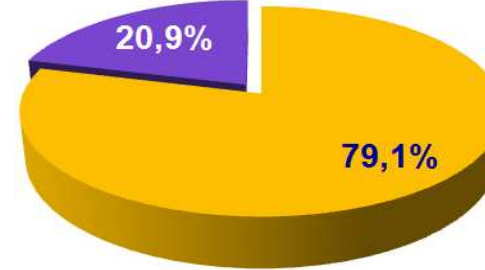
Area C

 cars  vans

Percentage of Vehicles

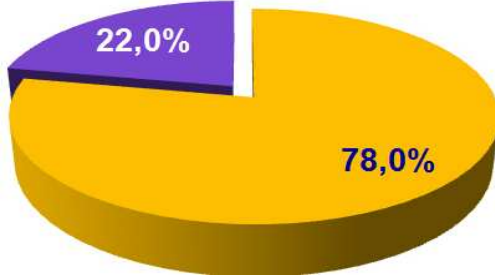


Daily Mileage

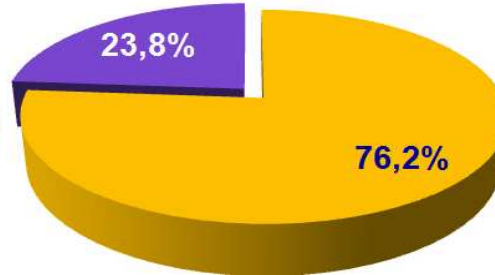


Actual i.c.e. Vehicles

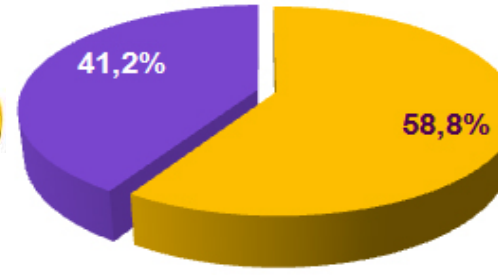
Primary Energy



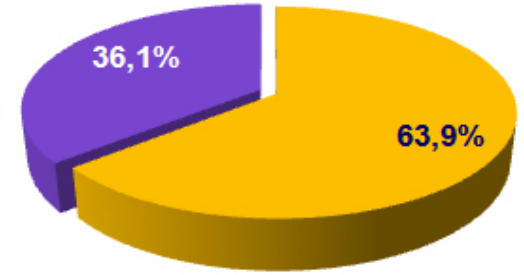
CO2 Emissions



NOx Emissions

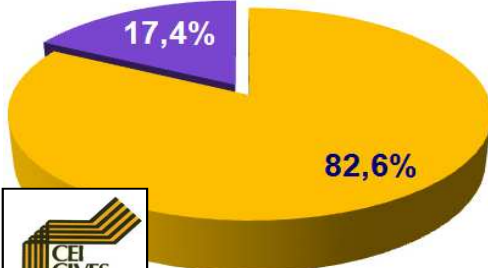


PM Emissions

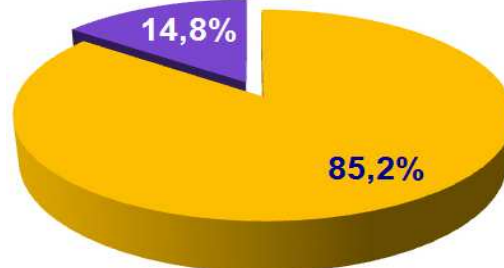


Replacing i.c.e. Vans with Electric Vans

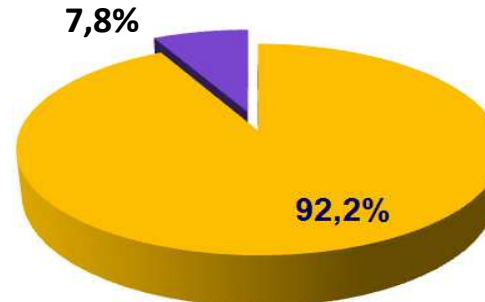
Primary Energy



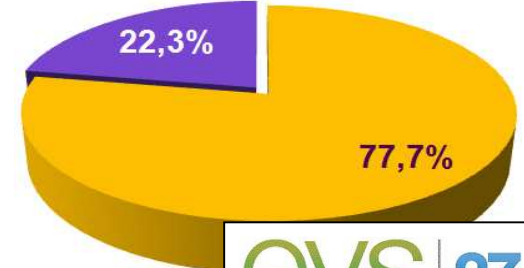
CO2 Emissions



NOx Emissions



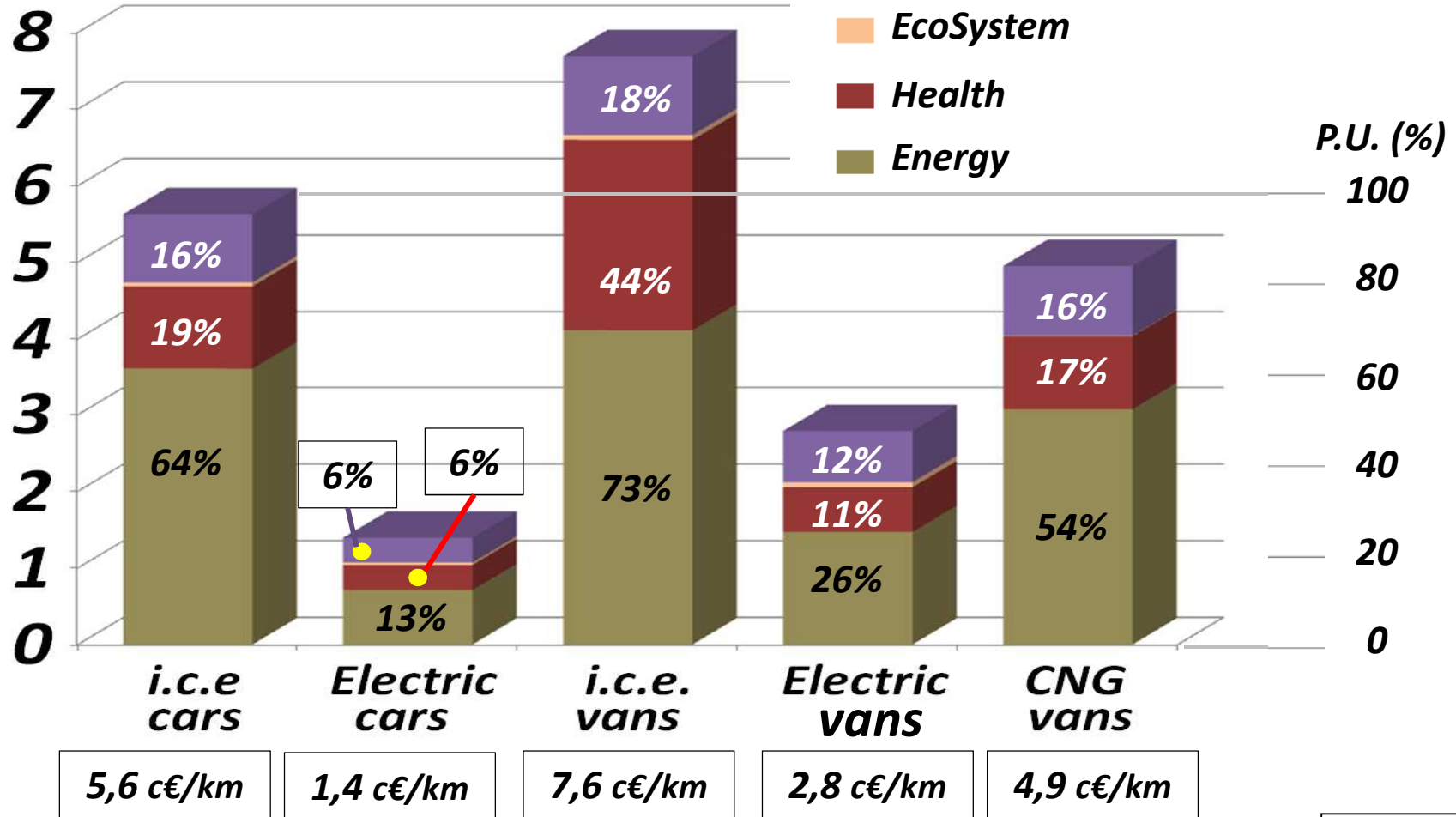
PM Emissions

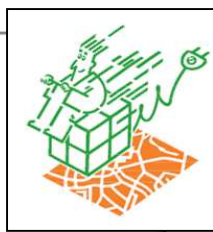


Cost for the Country of the different vehicle technology

Pollutant	Cost
CO	0,0032 €/g
HC	0,002 €/g
NOx	0,0088 €/g
PM exhaust	0,418 €/g
PM non-exhaust	0,209 €/g
CO ₂	40 €/ton
NOx (global)	0,00018 €/g
SO ₂ (global)	0,005 €/g

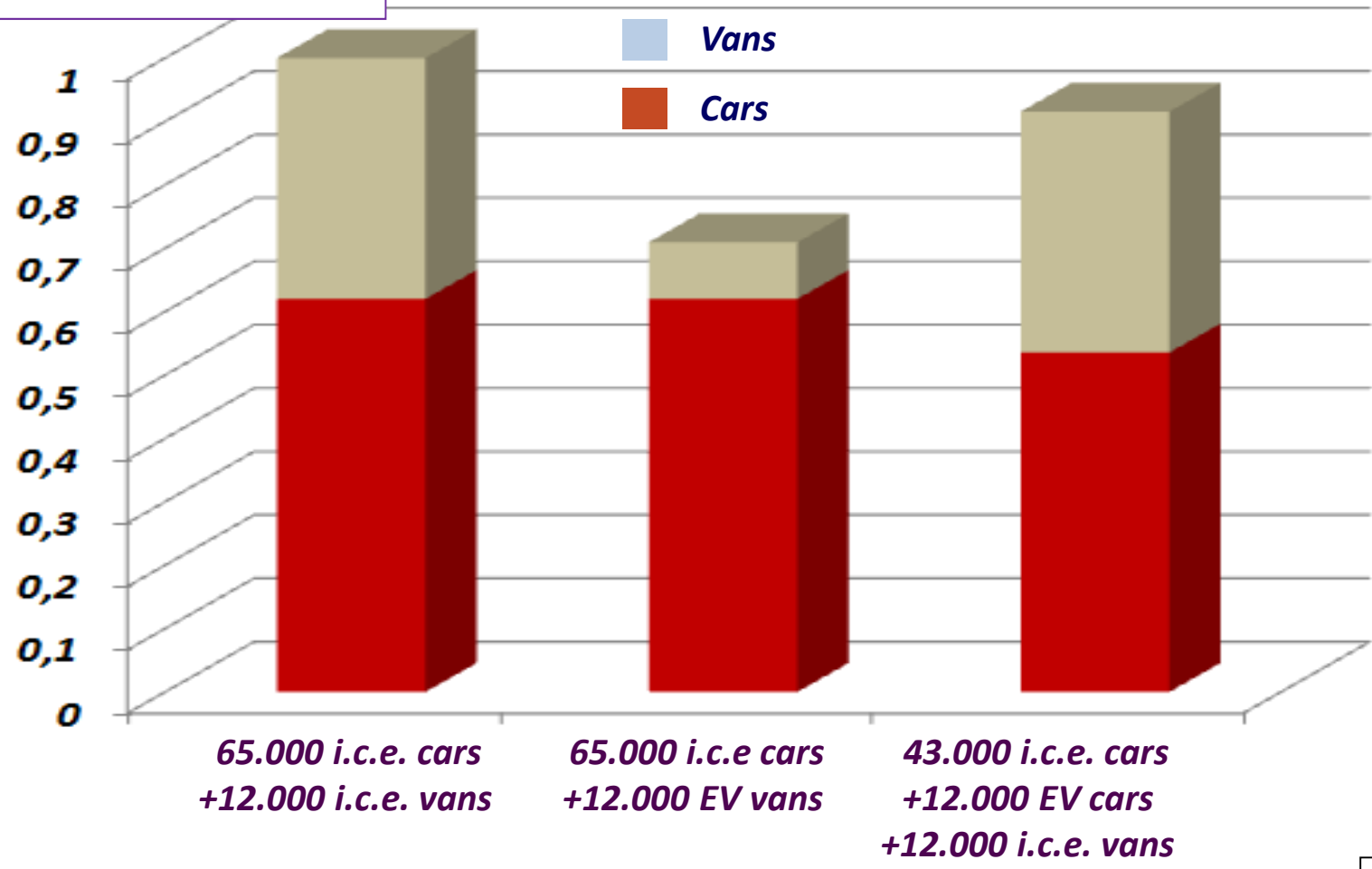
c€/km

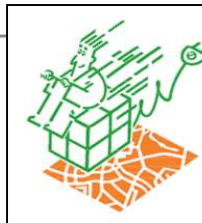




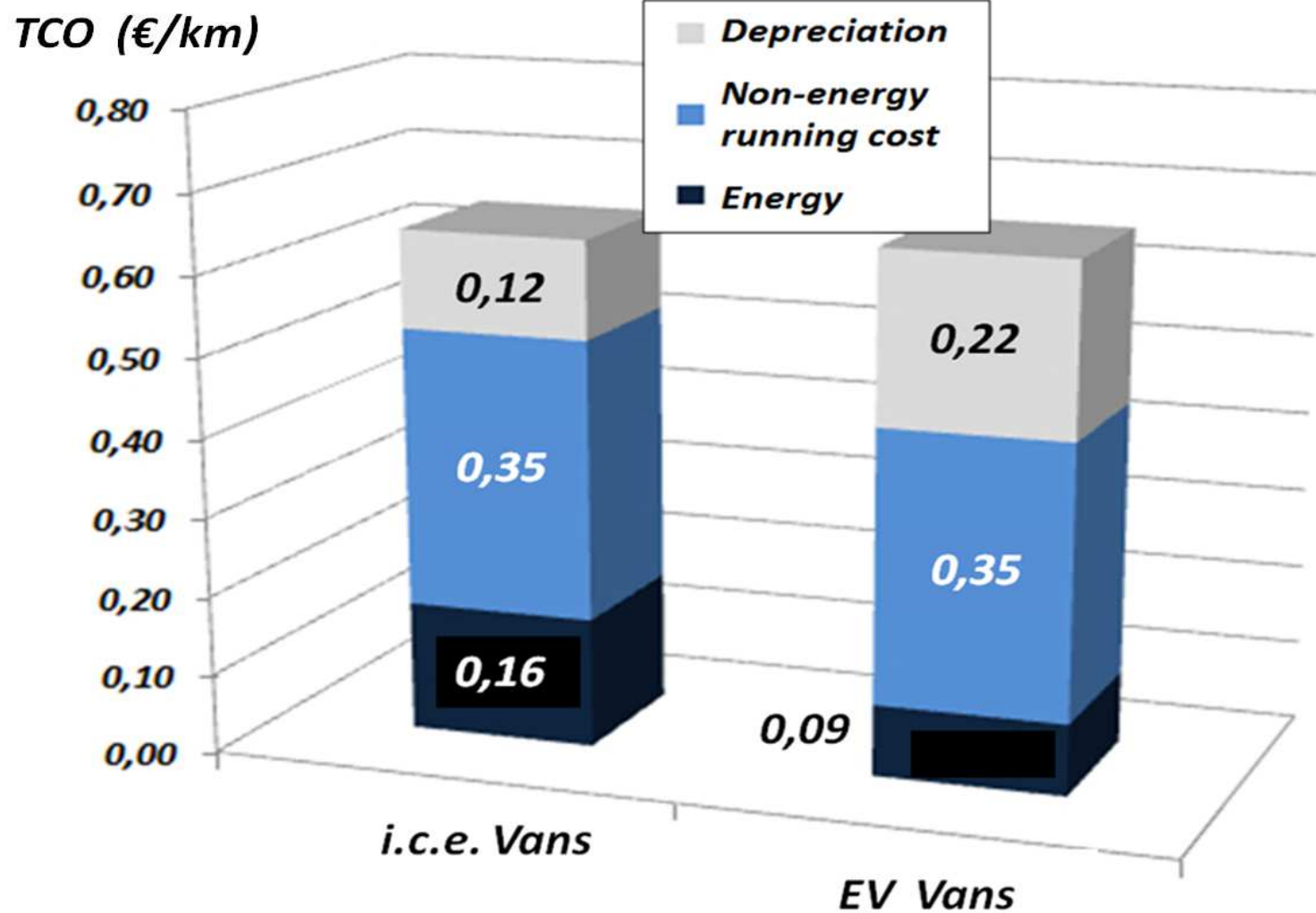
Replacing vans vs replacing cars

**Cost for the country
P.U.**



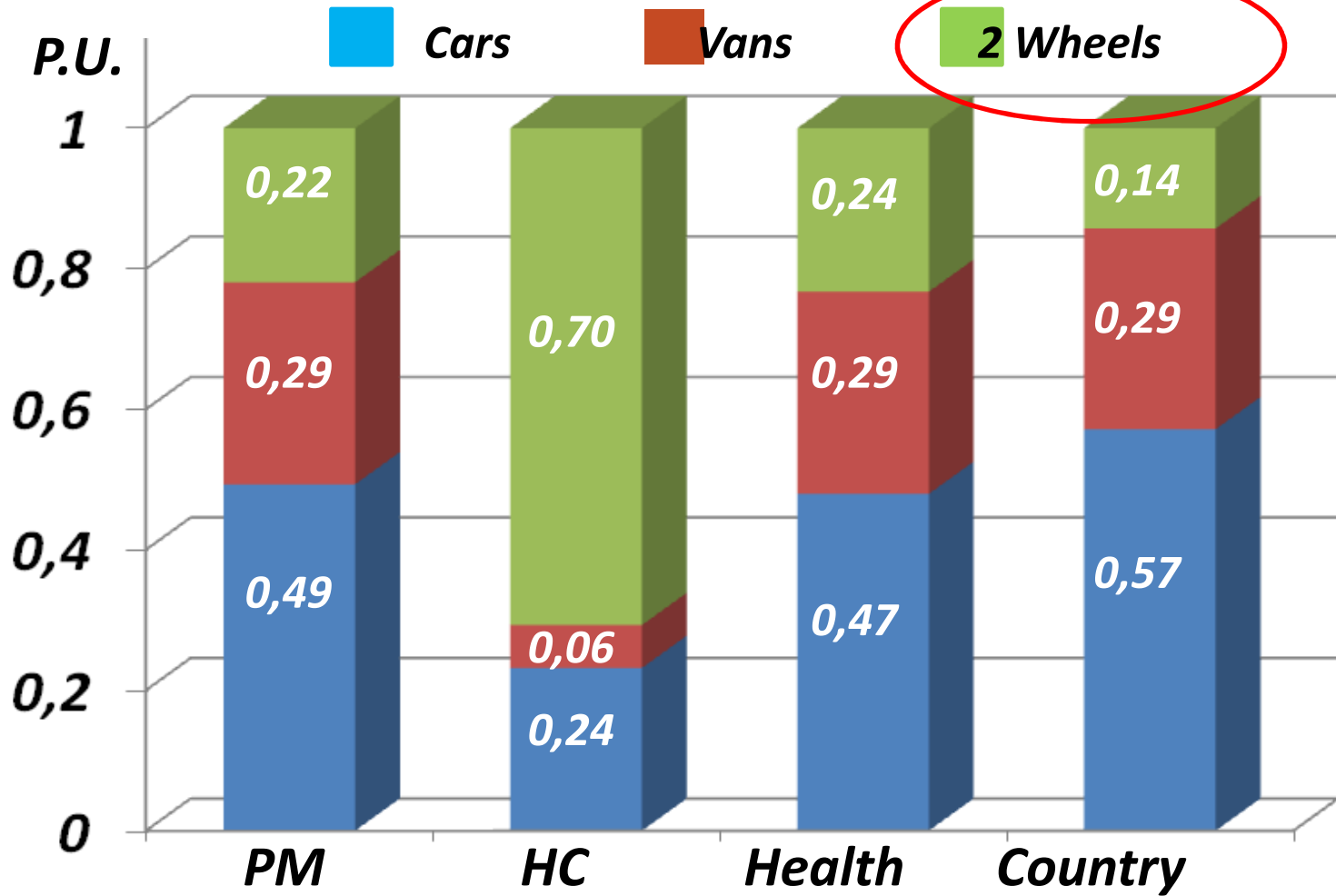


TCO of diesel and electric vans



Impact of the complete population of i.c.e. vehicles circulating in Area C

Fleet composition



Thanks for your attention!

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