



ONE WEDGE

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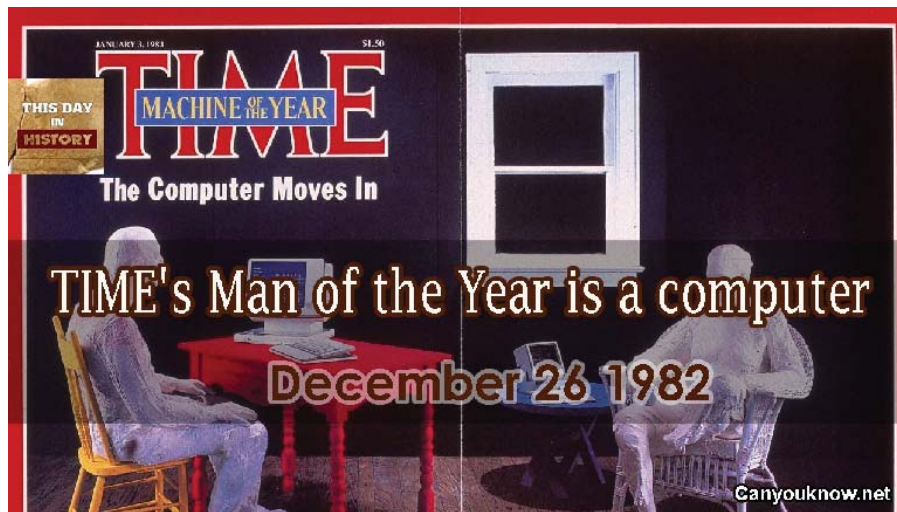
PROGRAMMA

- INTRO
 - Perché l'energia è così importante?
 - Perché i trasporti sono così importanti?
- L'AUTO ELETTRICA, QUESTA SCONOSCIUTA
 - Elettrificazione del powertrain
 - Rifornire l'auto elettrica
- MITI & LEGGENDE
 - Le materie prime
 - L'impatto sul pianeta
 - Auto elettriche e freddo
 - Auto elettriche e incendi
- A.M.A. - **A**sk **M**e **A**nanything

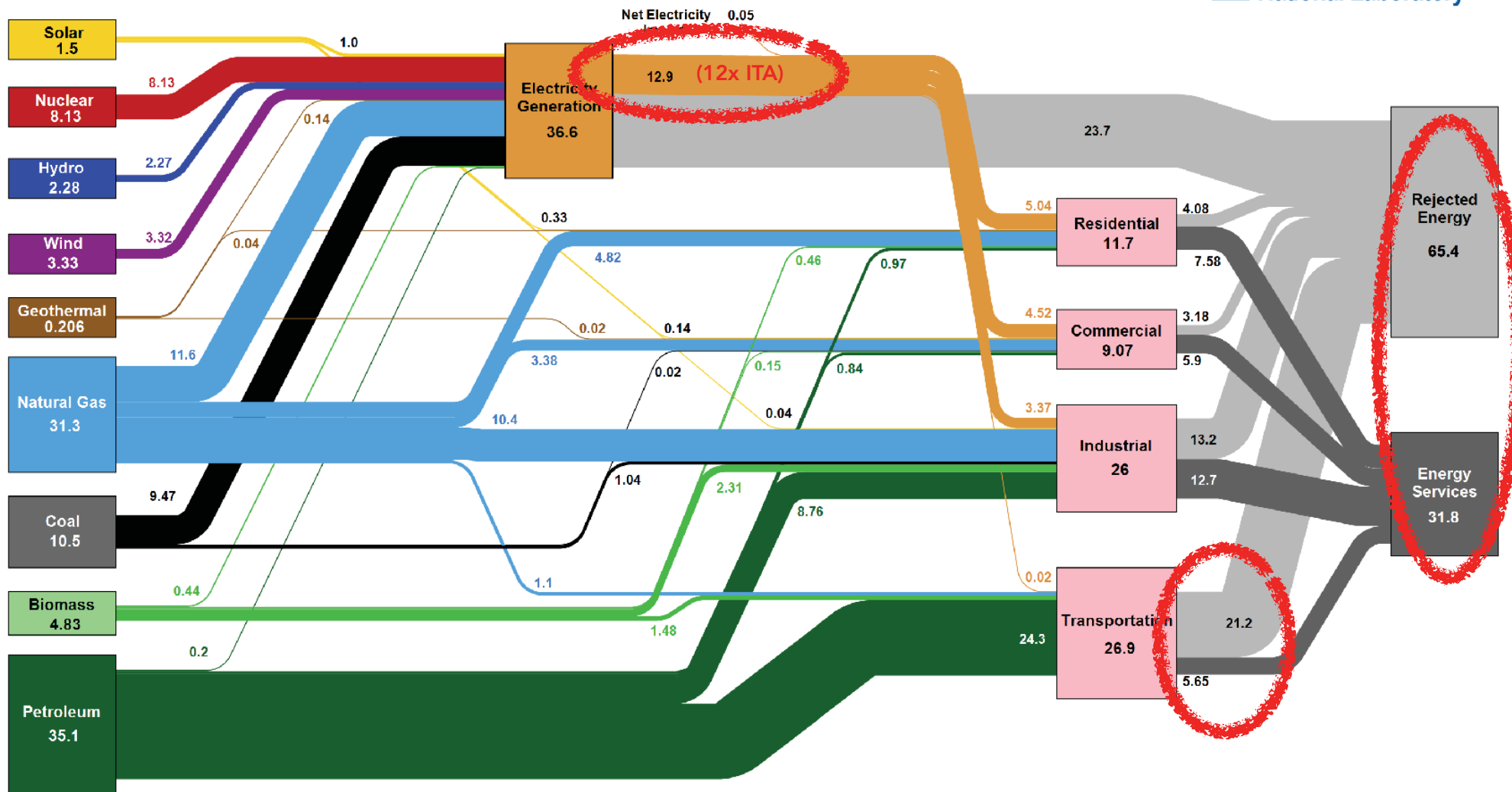
PERCHÉ
?



ALL HAIL THE ENERGY AGE !



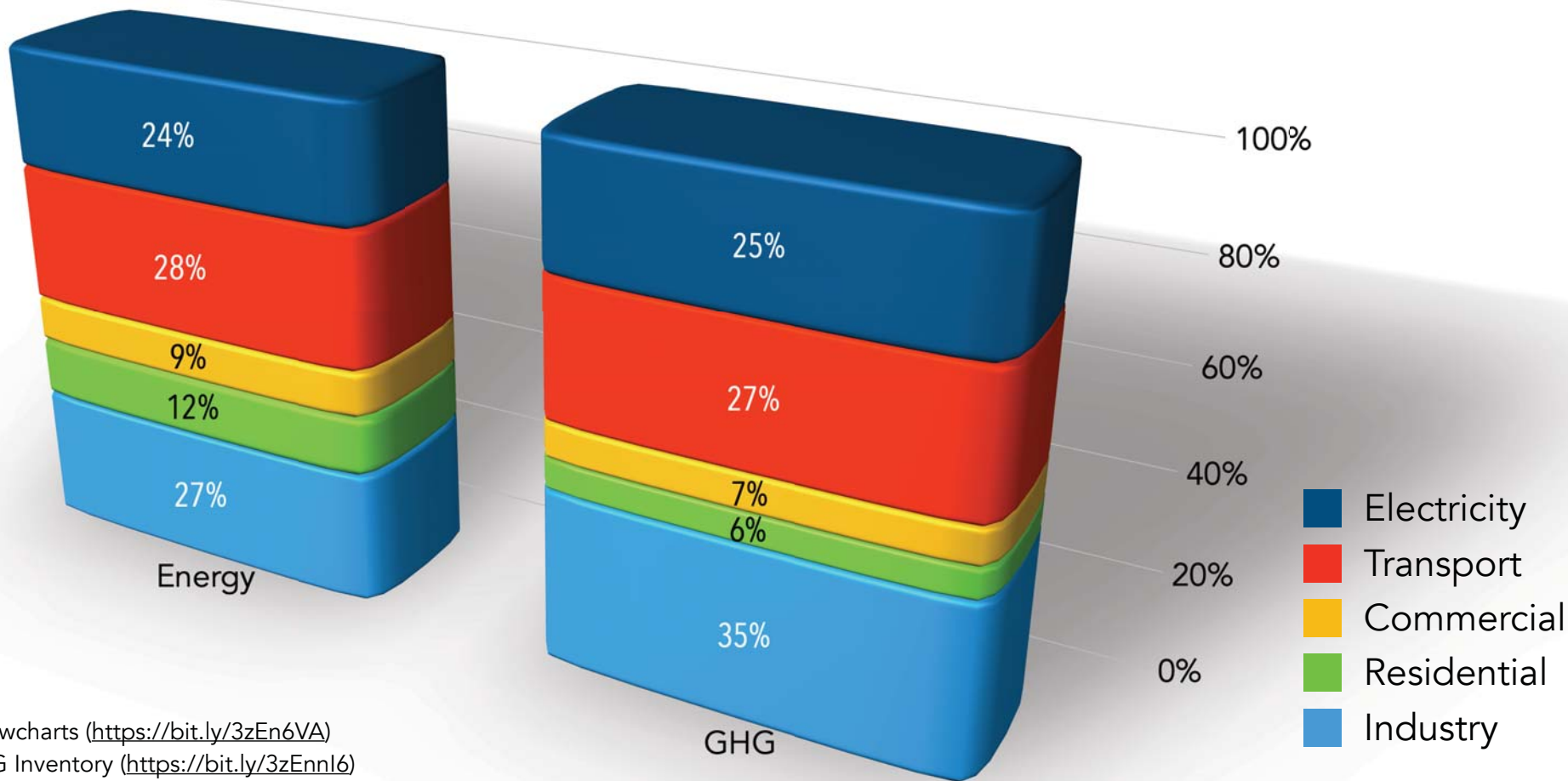
Consumo energia USA (2021): 28,500 TWh



Source: EIA, March 2022. Data is based on DOE/EIA MRS (2021) - T1. EIA's information is a secondary source of data. EIA does not guarantee the accuracy of the information. The information is provided for informational purposes only. The information is not intended to be used for any other purpose.

ENERGY vs. EMISSIONS

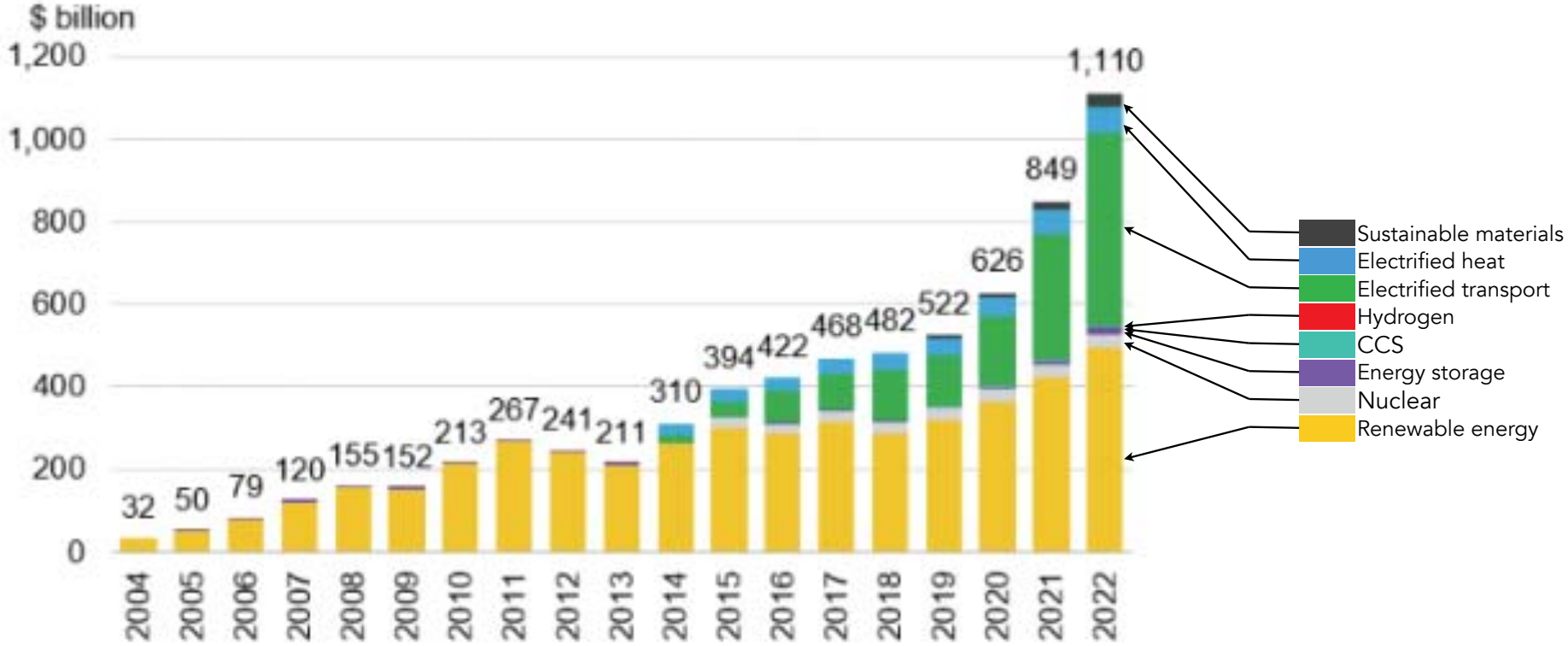
U.S. data, 2020



Sources:

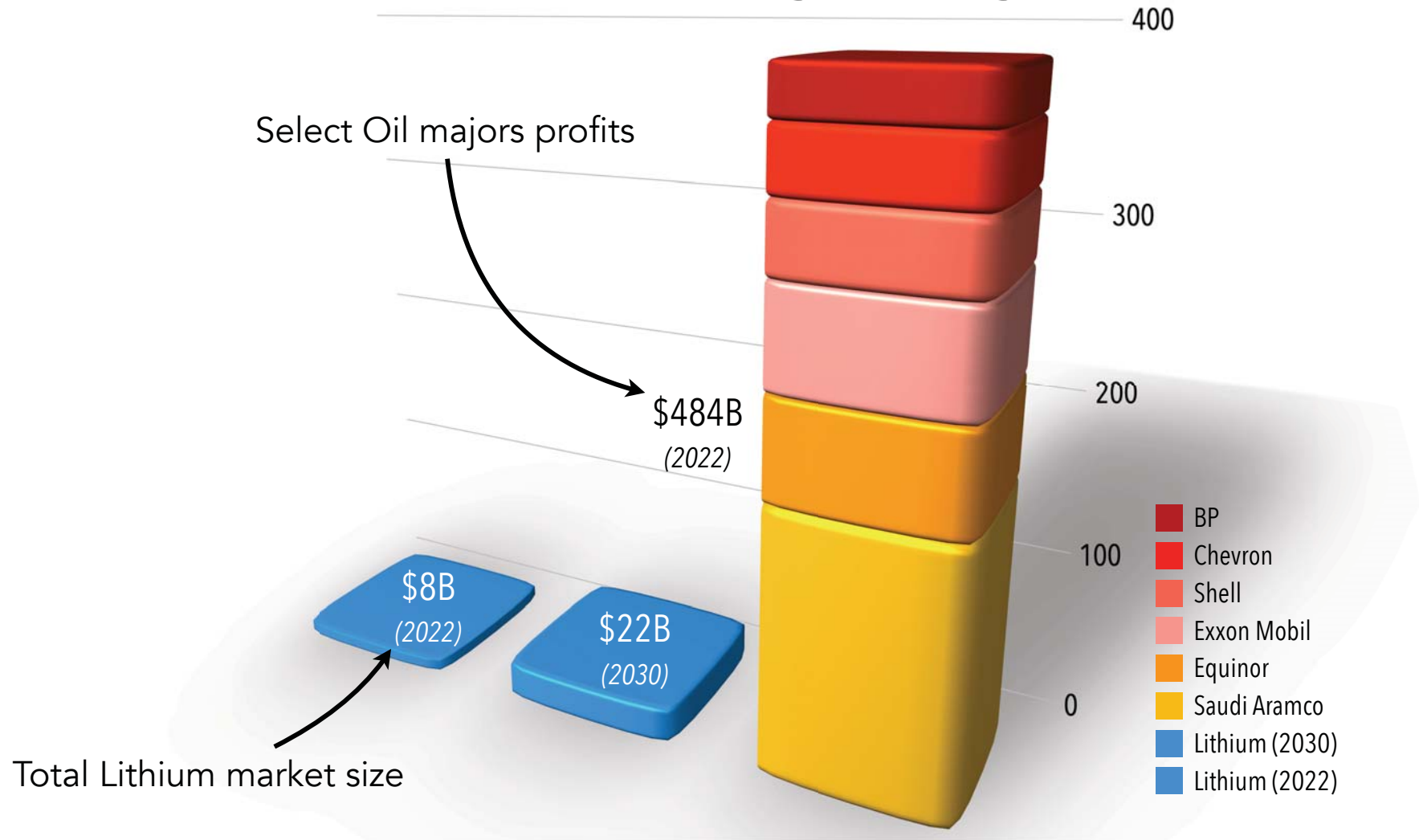
- LLNL Flowcharts (<https://bit.ly/3zEn6VA>)
- EPA GHG Inventory (<https://bit.ly/3zEnn16>)

GLOBAL INVESTMENT IN ENERGY TRANSITION



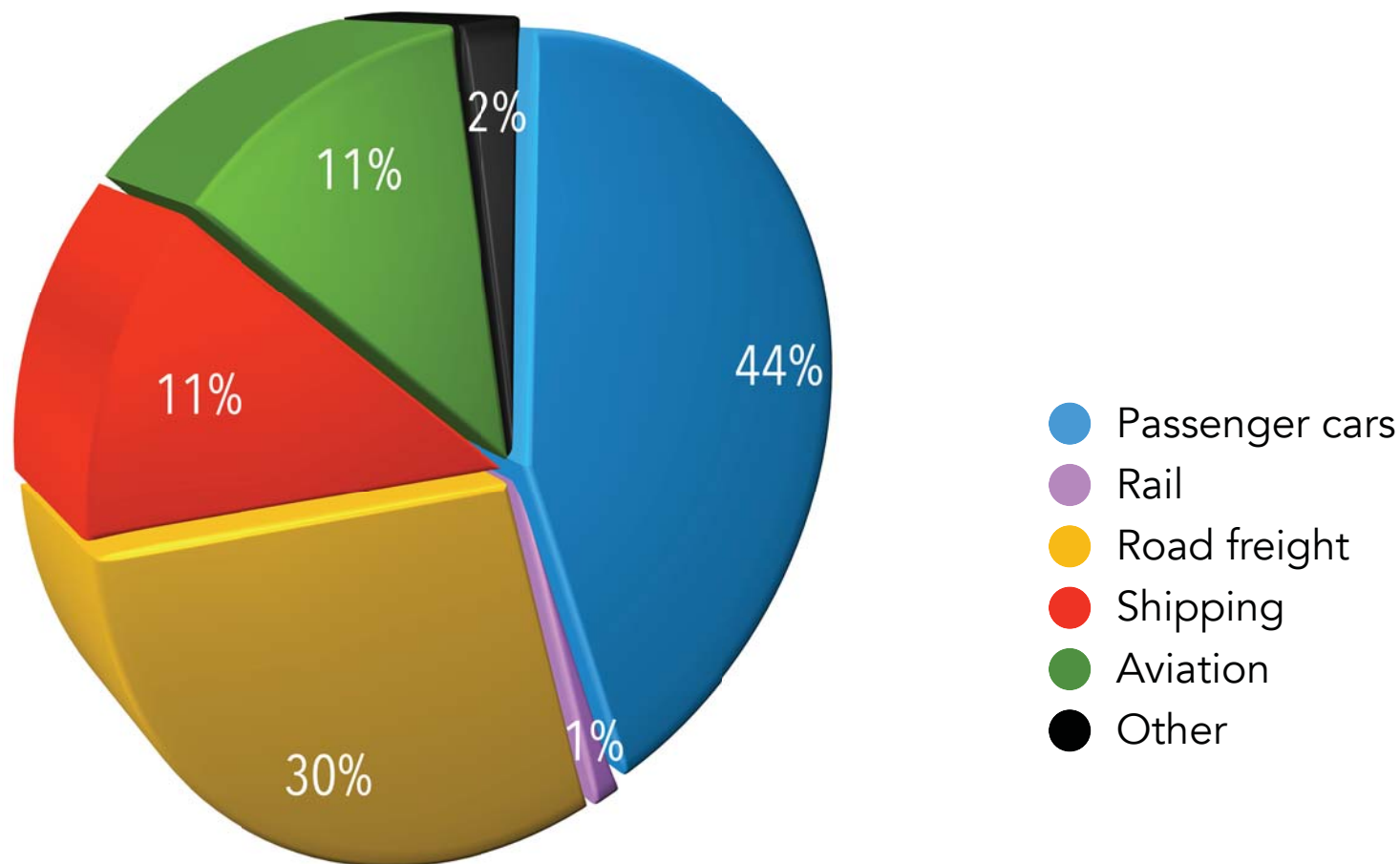
Source: BloombergNEF <https://bit.ly/49u4VB8>

RELATIVE SIZES...



TRANSPORT BREAKDOWN

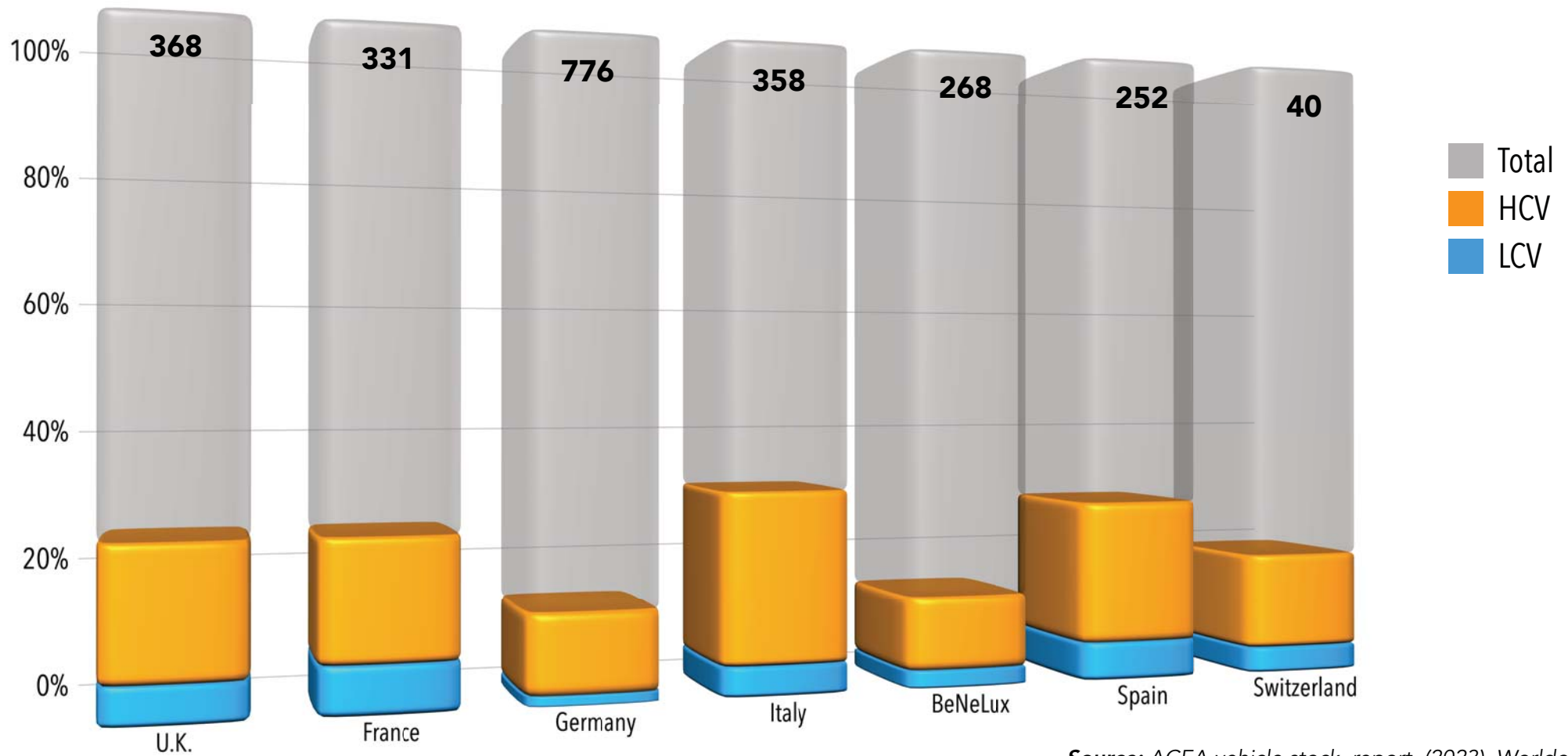
Worldwide emissions (2018): 8.1Gton



Source:

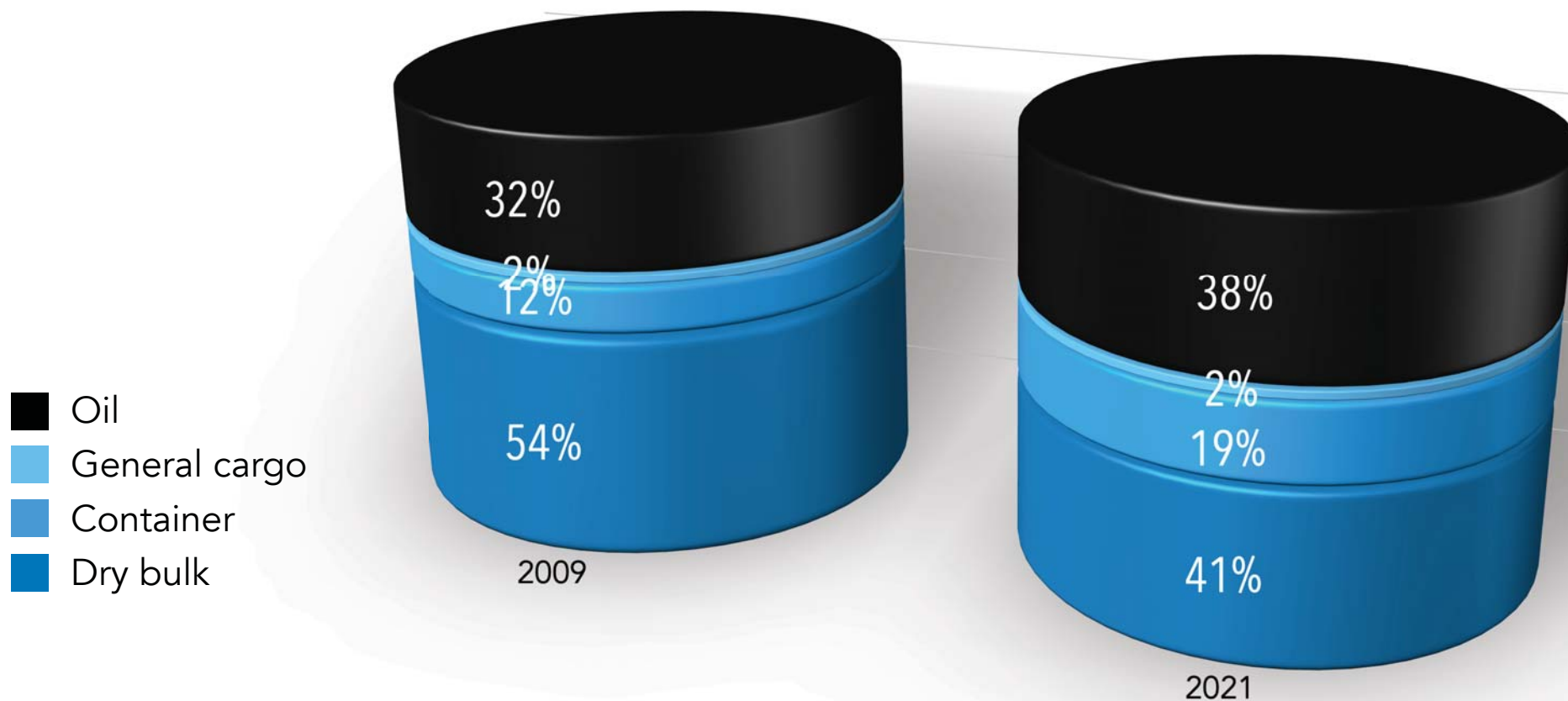
- IEA (<https://bit.ly/3HqMy2s>)

PERCHÉ I TRASPORTI?



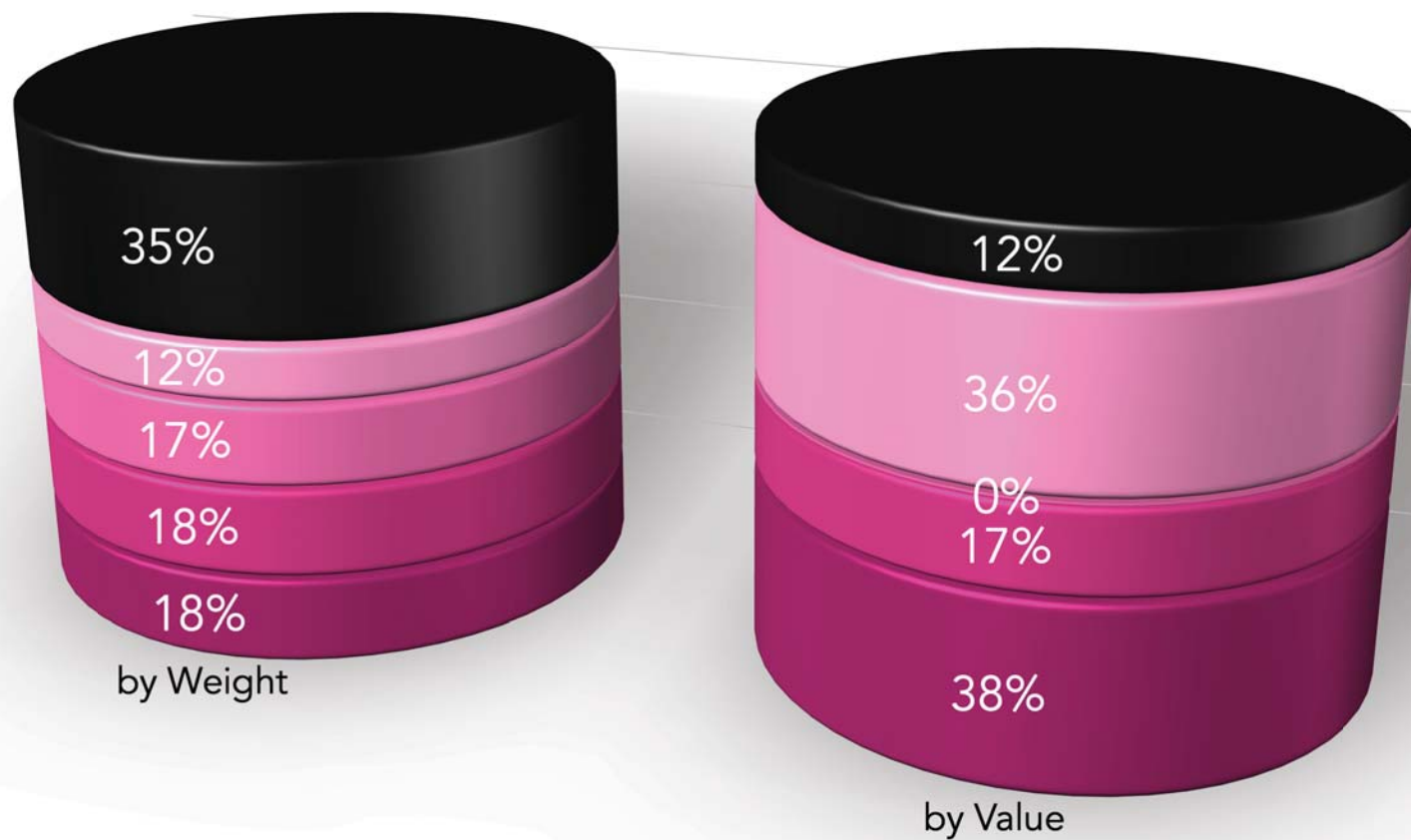
Source: ACEA vehicle stock, report, (2023), Worldometer

OIL GLOBAL CARGO % MARITIME



https://unctad.org/system/files/official-document/rmt2021_en_0.pdf

FOSSIL GLOBAL CARGO % TRUCKING



- Fossil fuels
- Metals & Machinery
- Building
- Food & agricultural
- Other

Source: BTS 2017 data <https://www.bts.gov/topics/freight-transportation/freight-shipments-commodity>

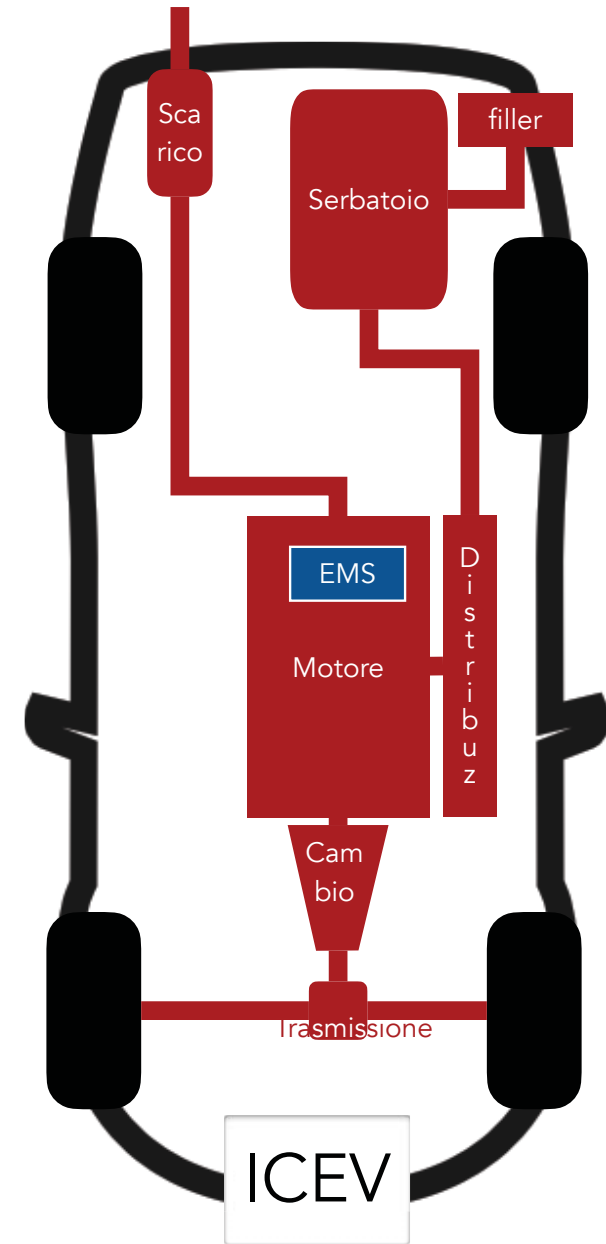
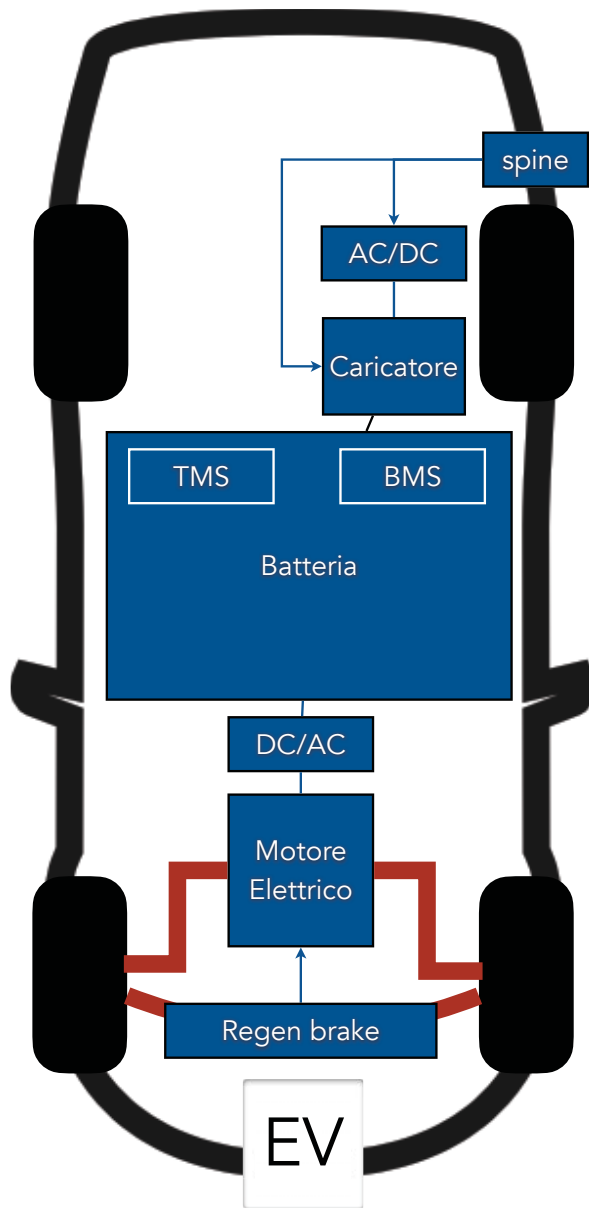
AUTO ELETTRICA, QUESTA SCONOSCIUTA

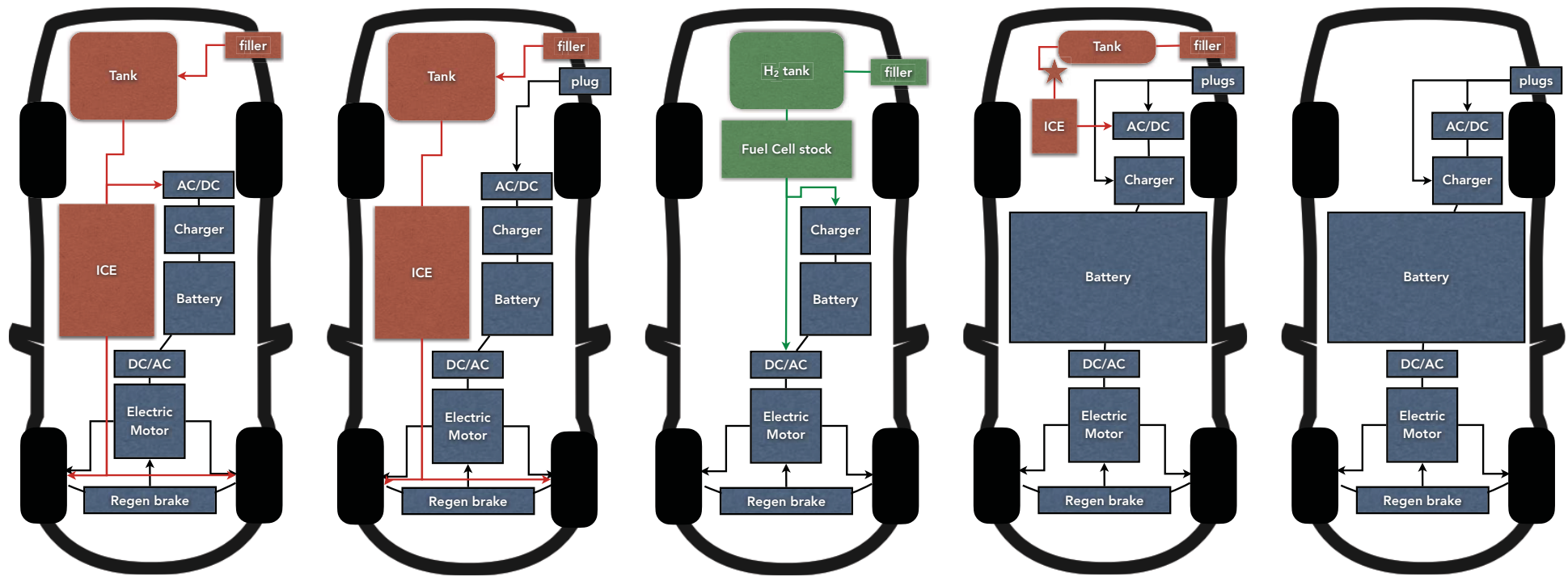


UN NUOVO BARICENTRO INDUSTRIALE

COMPONENTI
MECCANICHE

COMPONENTI
ELETTRICHE





HEV

PHEV

FCEV

BEV + REx

BEV

Esempio:	Toyota Prius	Mini Countryman Plug-In	Toyota Mirai	BMW i3	Tesla Model S
Efficienza:	54% ↔ 15%	60% ↔ 17%	22% (???)	73% ↔ 20%	73%
Trasmissione:	SI / HSD	SI	NO	NO	NO
Cambio:	SI	SI	NO	NO	NO
Motore:	AC sincrono	AC sincrono	AC sincrono	AC sincrono	AC induzione/sincrono
Emissioni:	-57% ↔ +11% CO ₂	-58% ↔ +2% CO ₂	-50% (???) CO ₂	-66% ↔ -8% CO ₂	-66% CO ₂



L'EFFICIENZA, VISUALIZZATA



3.0L V6 Ecotech 2

- 290 Nm peak torque output
- 200 kg Weight

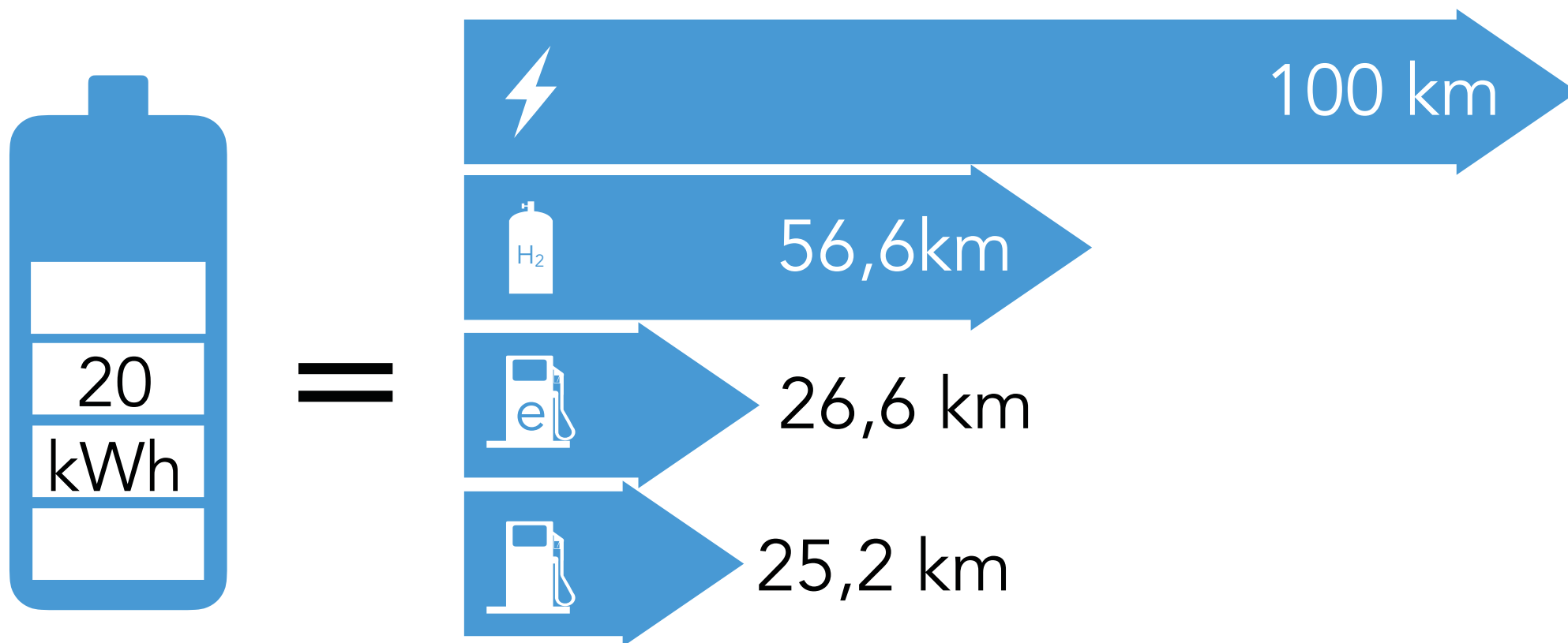


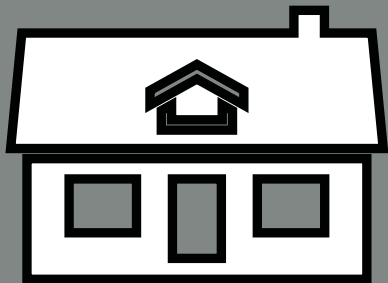
Evans Electric AFIM

- 290 Nm peak torque output
- 45 kg Weight

L'EFFICIENZA, VISUALIZZATA

ESCLUSO TRASPORTO





Home

Notte

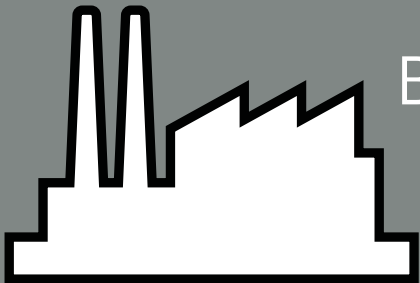
Lenta

Privata

Alternata

Basso Capex

39M



Out-of-home

Giorno

Veloce

Pubblica

Continua

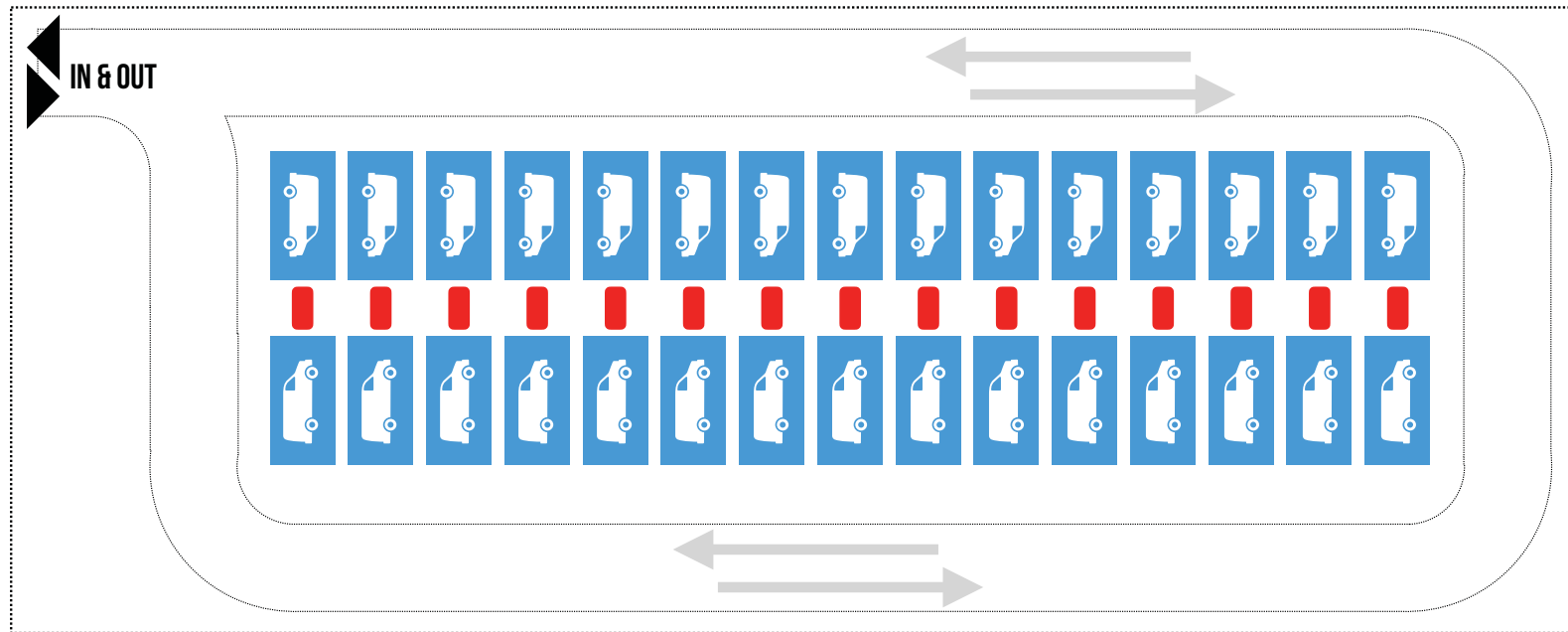
Alto Capex

125.570



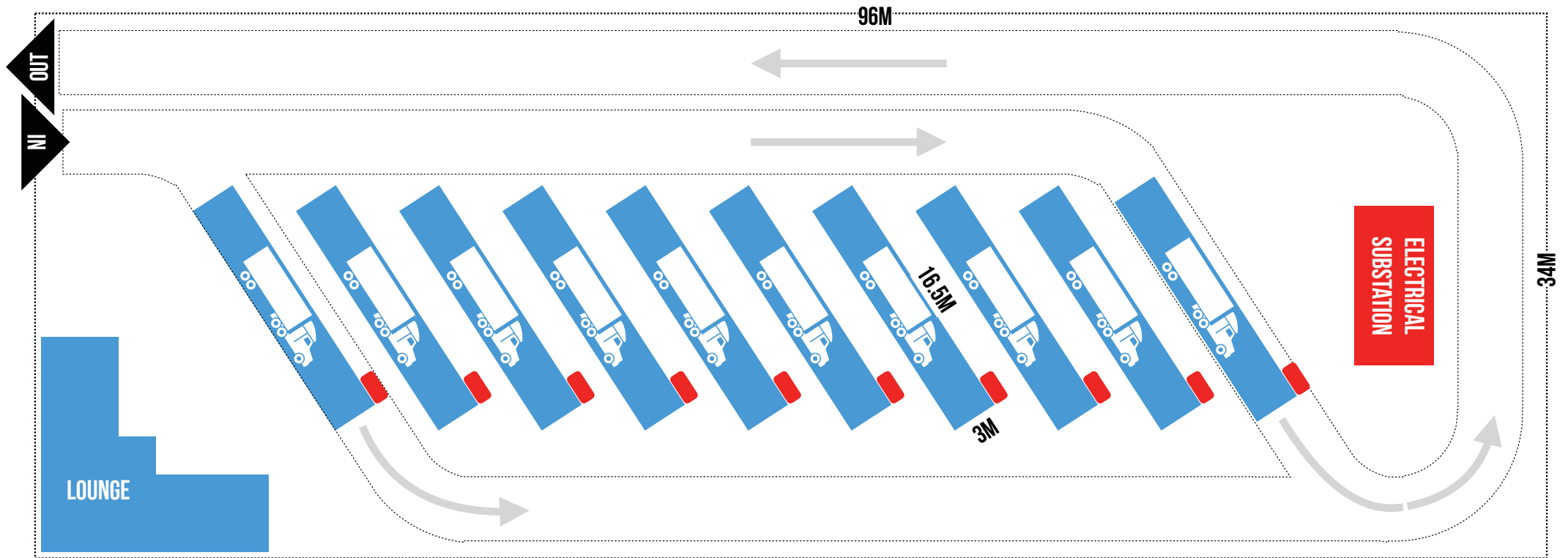


LCV ELECTRIC PLAZA™



- 30 furgoni
- Consumo annuale: 350 MWh
- Allaccio in B/MT (100kW >>>)

HCV ELECTRIC PLAZA™



- 10 mezzi pesanti x 2 turni
- Consumo annuale: 1800 MWh
- Allaccio in MT (3.5MW)

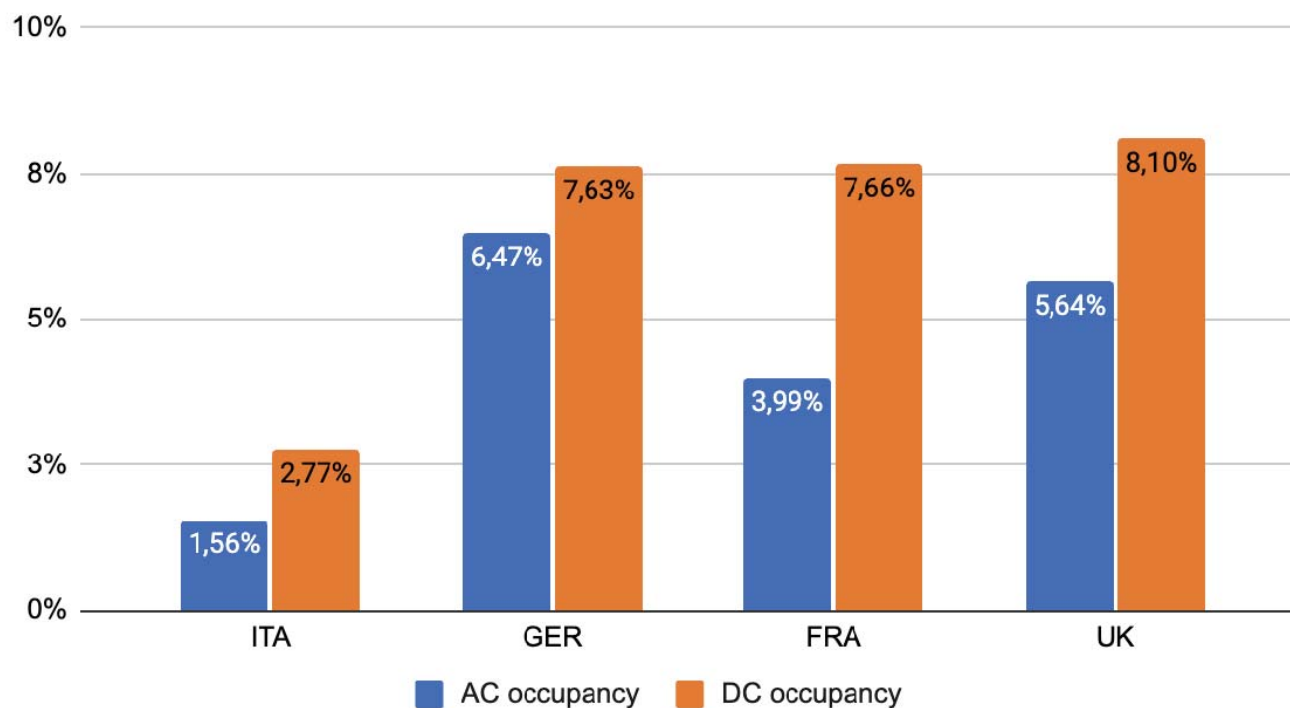
TASSI DI OCCUPAZIONE

Ipotesi:

- AC = 7 kW
- DC = 50 kW
- %OOH AC = 10%
- %OOH DC = 15%
- Consumo = 200Wh/km

Fonte dati:

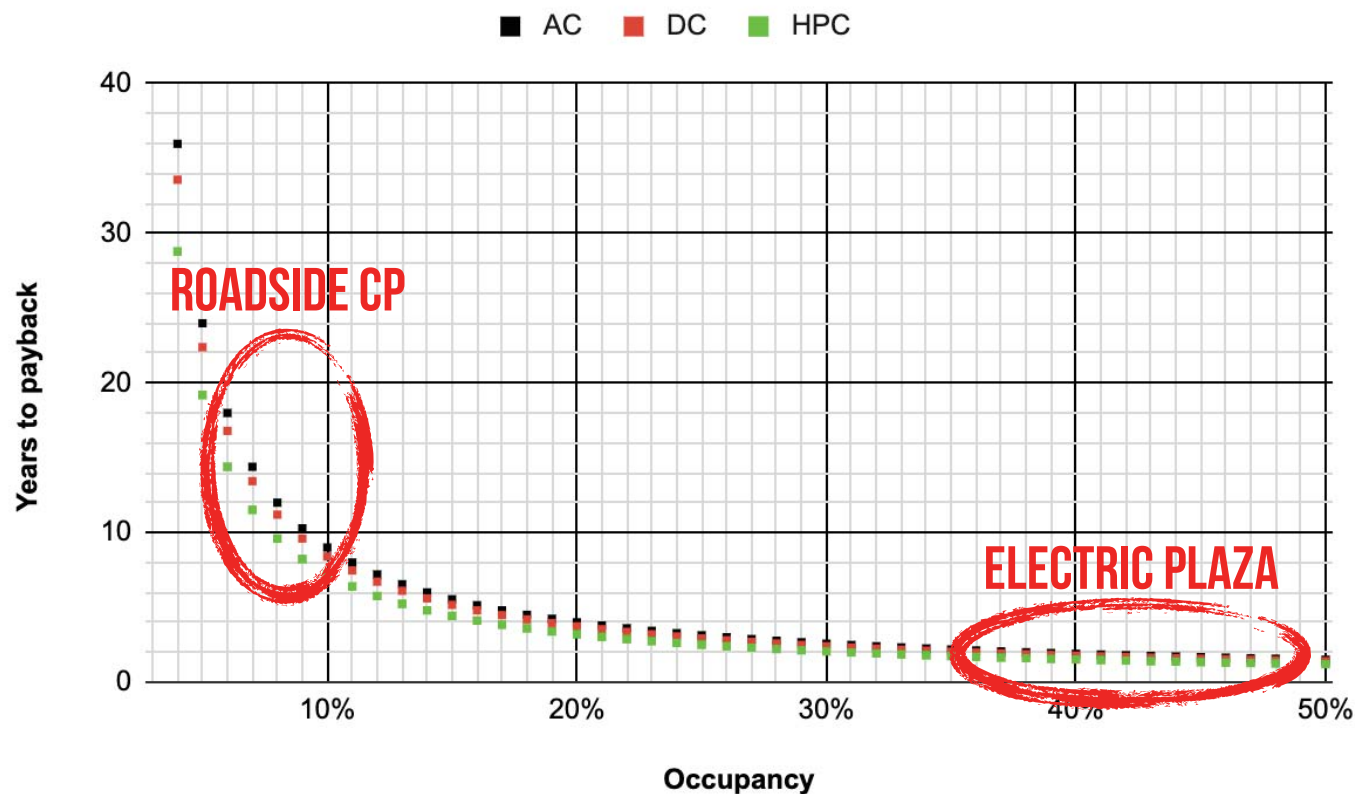
EC's EAFO (European Alternative Fuel Observatory)



OCCUPAZIONE & ROI

Ipotesi:

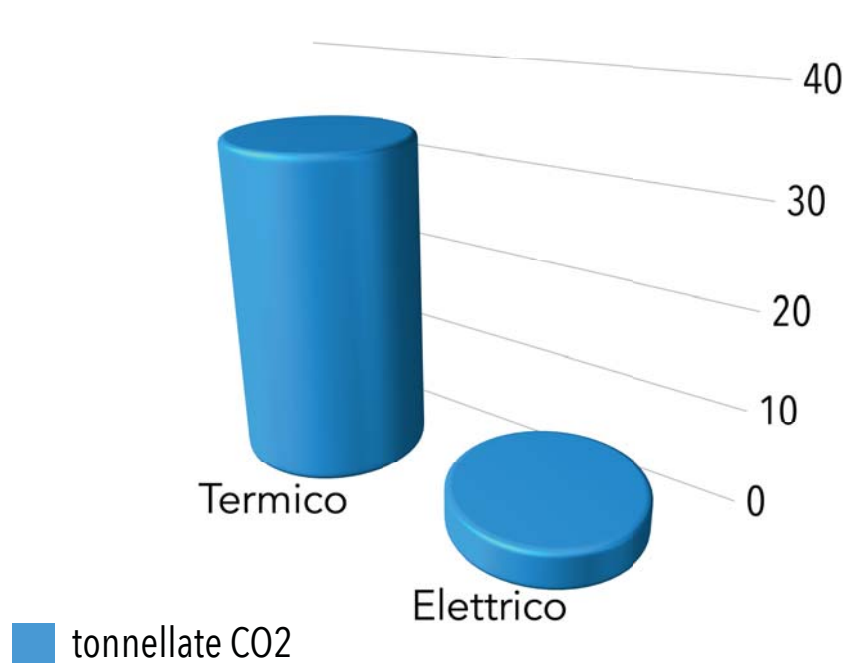
- AC = 7 kW = €7,500
- DC = 50 kW = €50,000
- HPC = 350kW = €300.000
- PUN = €0.11
- Margine lordo EE = €0,17



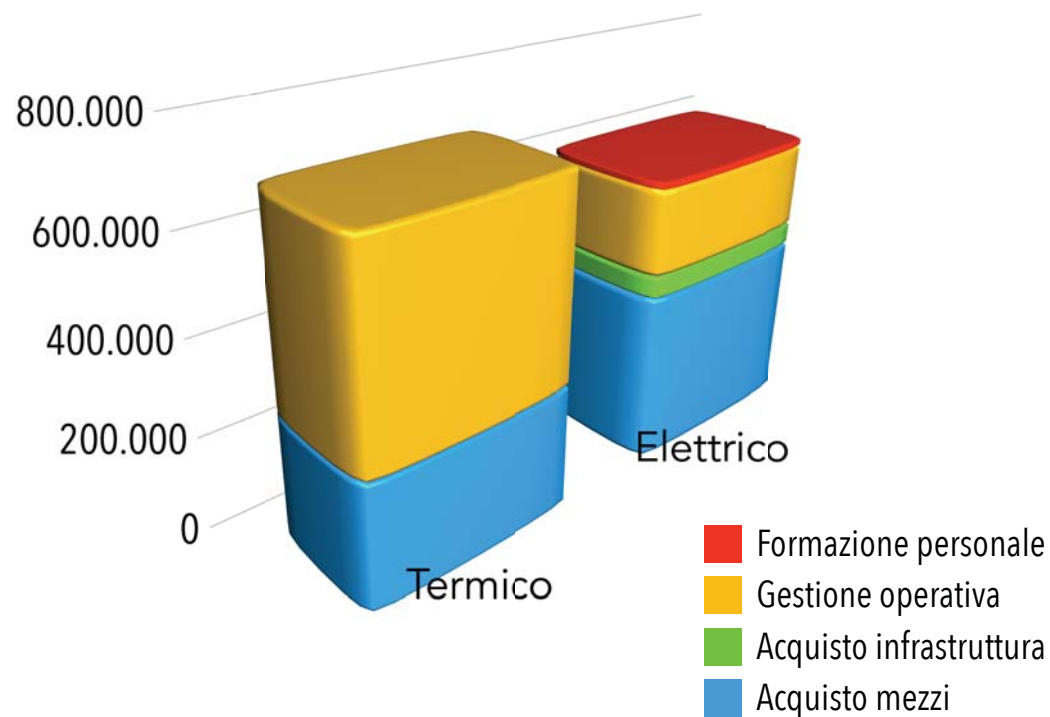
CASI CONCRETI

Toscana Innova: progetto ZEV ASA (Tivoli) - 5 anni di esercizio (2022-2027)

Emissioni CO2



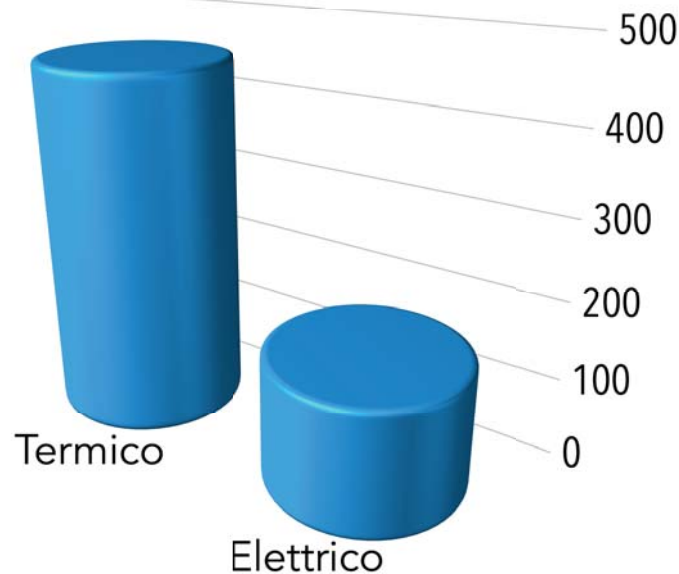
Investimenti



CASI CONCRETI

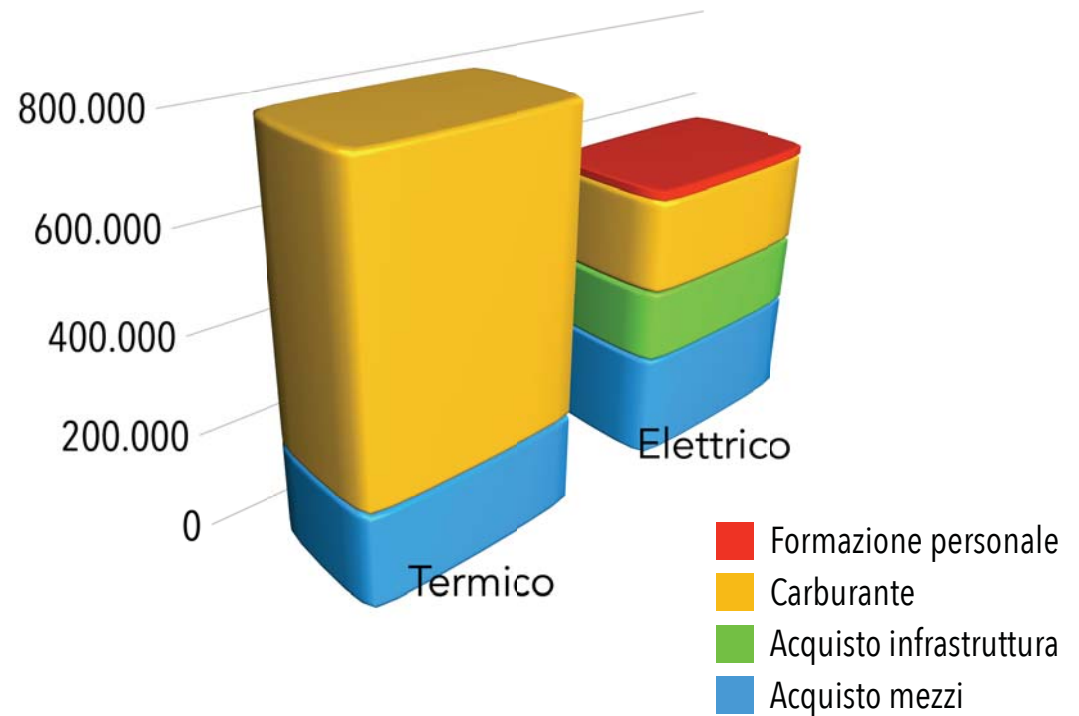
TeamWork Trasporti (Torino) - 5 anni di esercizio (2022-2027)

Emissioni CO2

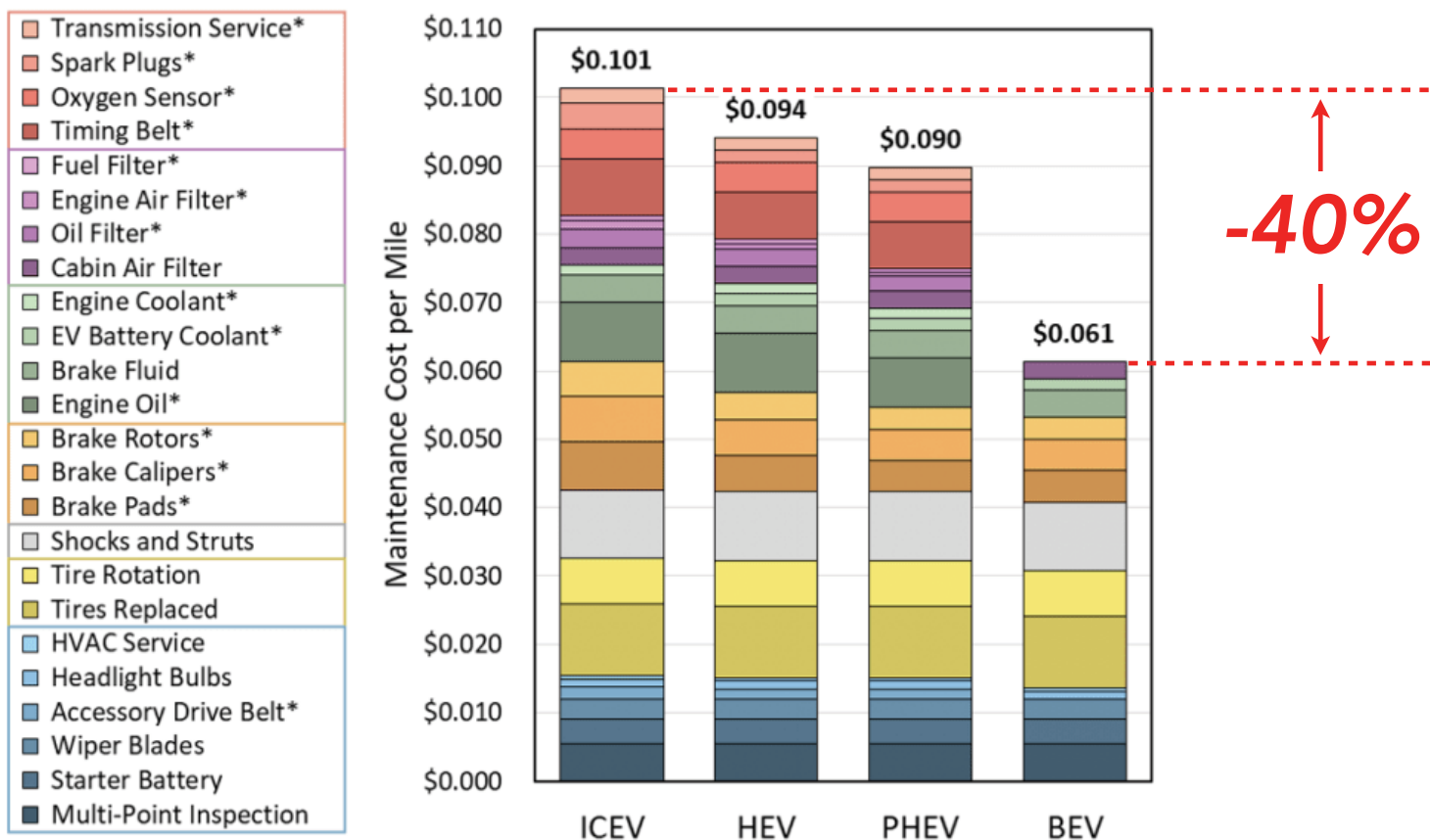


■ tonnellate CO2

Investimenti



MANUTENZIONE FURGONI



- Transmission Service*
- Spark Plugs*
- Oxygen Sensor*
- Timing Belt*
- Fuel Filter*
- Engine Air Filter*
- Oil Filter*
- Cabin Air Filter
- Engine Coolant*
- EV Battery Coolant*
- Brake Fluid
- Engine Oil*
- Brake Rotors*
- Brake Calipers*
- Brake Pads*
- Shocks and Struts
- Tire Rotation
- Tires Replaced
- HVAC Service
- Headlight Bulbs
- Accessory Drive Belt*
- Wiper Blades
- Starter Battery
- Multi-Point Inspection

Source: <https://www.energy.gov/eere/vehicles/articles/fotw-1190-june-14-2021-battery-electric-vehicles-have-lower-scheduled>

MITI & LEGGENDE





← 31% of road freight

IMPROVING GLOBAL FREIGHT SAFETY

40% of maritime freight →



RIFIUTIAMO L'IPOCRISIA

COBALT

Other batteries

Nickel-based alloys

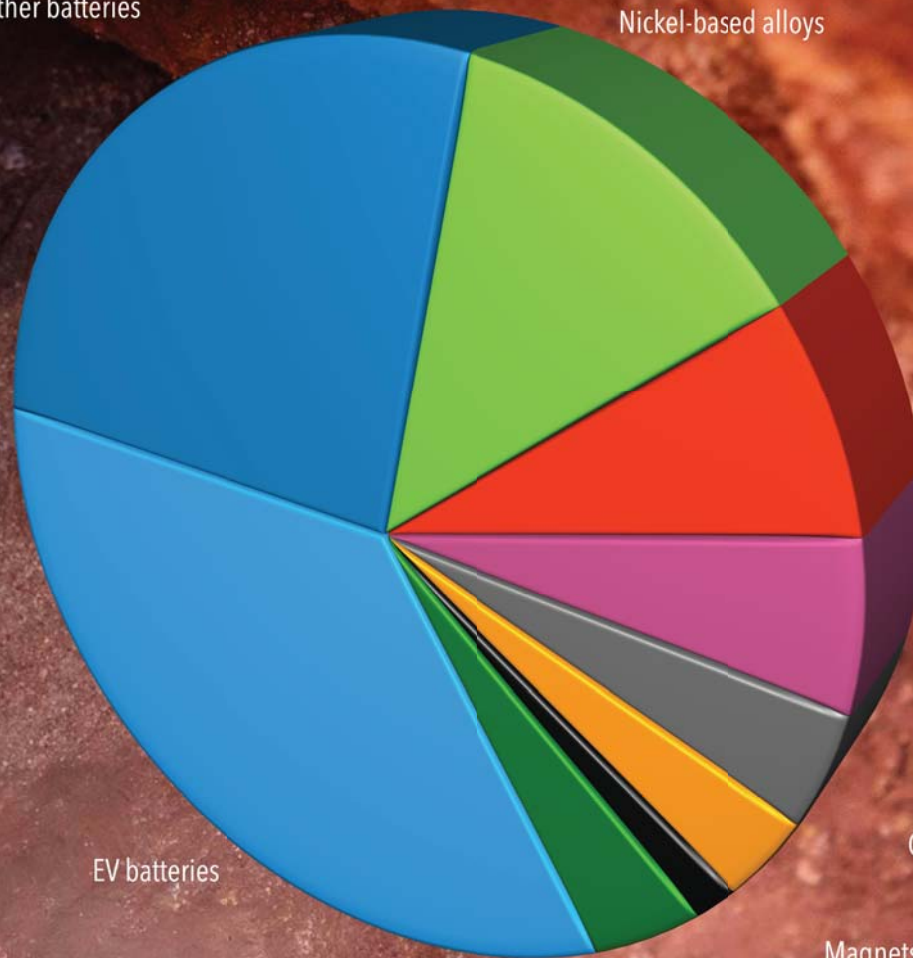
Tools

Pigments

Catalysts

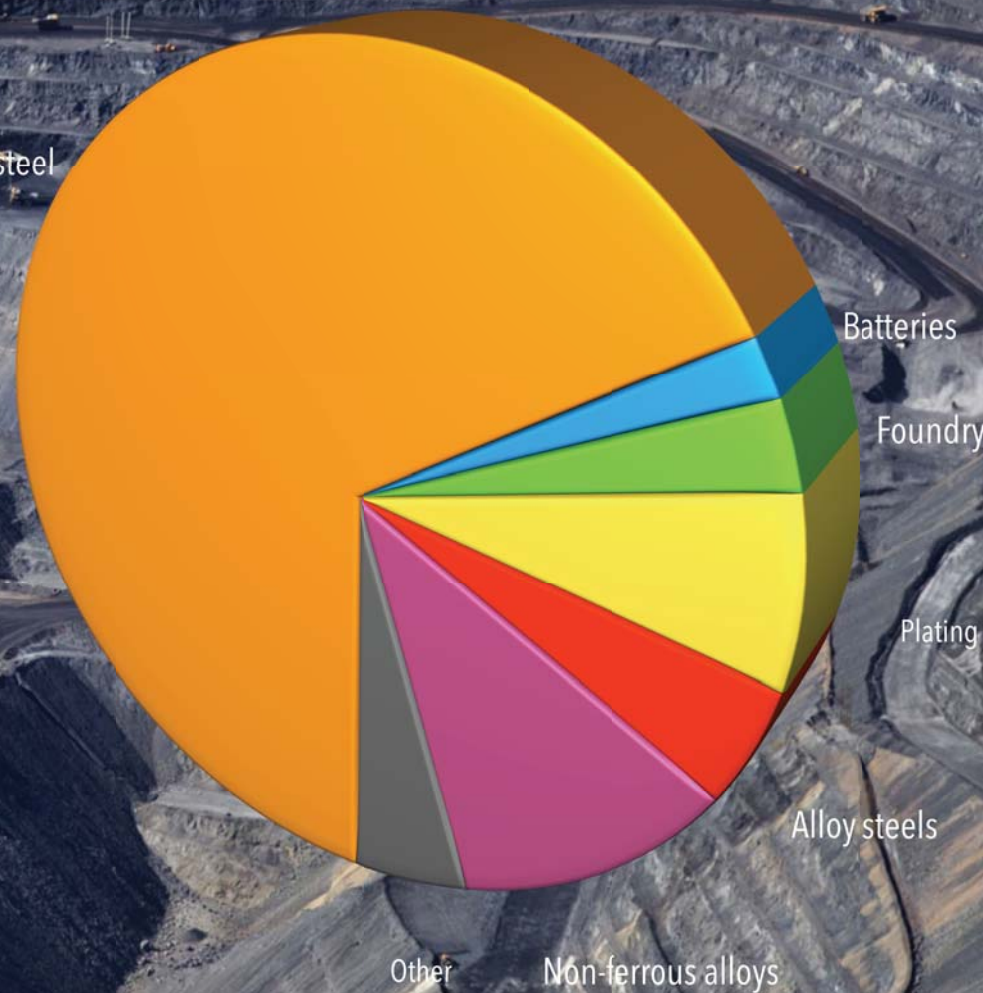
Magnets

EV batteries



RIFIUTIAMO L'IPOCRISIA

NICKEL



"MINING DEFACES THE PLANET"

Gtons annual production

COAL: 7.6

OIL: 4.3

GAS: 3

STEEL: 1.9

0.18 (2050)

Lithium +
Cobalt+
Nickel +
Silicon+
Silver+
Rare earths +
Copper =
0.035 (2020)

Source: Our World in Data, BP, IEA, EIA, Bloomberg NEF

JOHAN CRUJIFF ARENA - AMSTERDAM

148 Nissan Leaf esauste



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SUSTAINABLE BUSINESS

Old Electric-Vehicle Batteries Are Getting a Second Life

Auto makers like Nissan and Renault are using retired batteries to build large-scale energy-storage systems



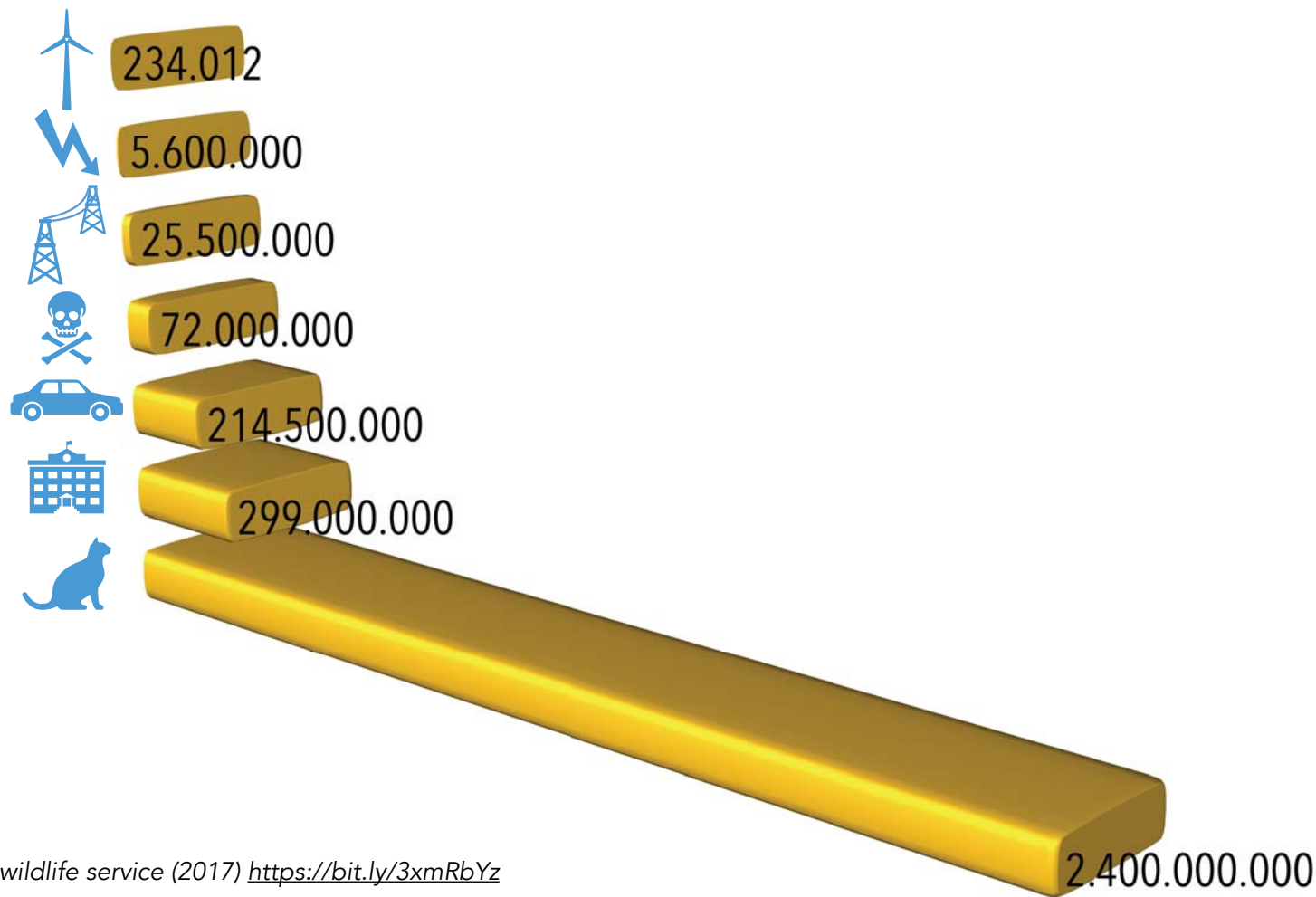
“WIND TURBINES ARE AN EYESORE”





BIRD MORTALITY

from selected anthropogenic causes



Source: U.S. fish and wildlife service (2017) <https://bit.ly/3xmRbYz>

BIRD MORTALITY

A photograph of an offshore wind farm in the ocean. The sky is a clear, vibrant blue with a few wispy white clouds. The water is a deep, dark blue with small whitecaps. In the foreground, the dark blue water is visible. In the middle ground, a long line of white wind turbines extends across the horizon. The turbines have three blades each, and their towers are visible. The background shows a clear blue sky with a few scattered white clouds.

Vattenfall Has It on Video: No Seabird Collided with Aberdeen Offshore Wind Turbines During Two-Year Monitoring Campaign

RESEARCH & DEVELOPMENT

February 28, 2023, by Adrijana Buljan

Source: Vattenfall study: <https://bit.ly/3ZwBTLt>

FULL ICE TANK: 73 hrs

FULL EV BATTERY: 107 hrs



PLATFORM

NORDIC PRESENCE

SERVICES

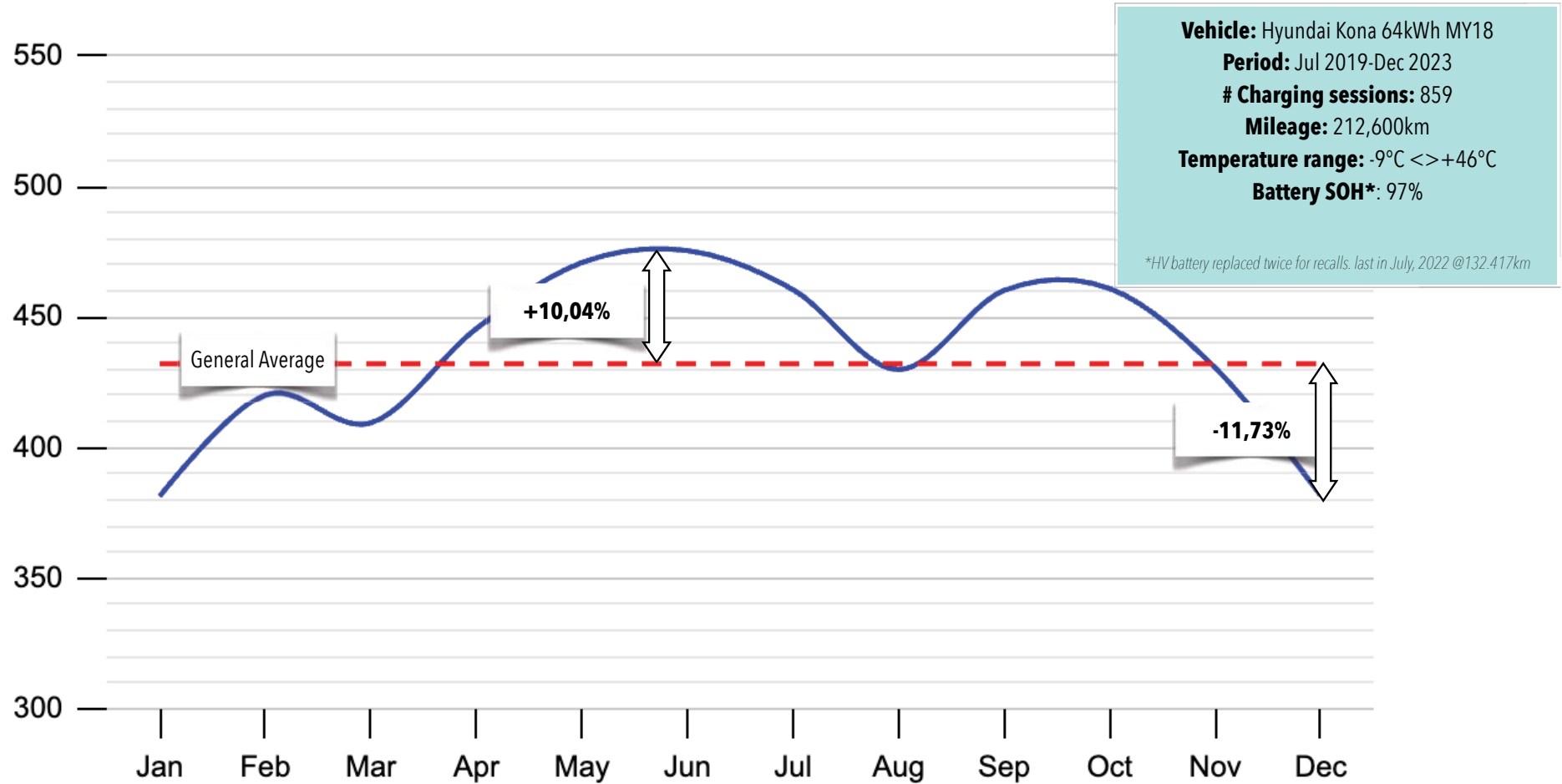
VIKING GROUP

Base: 34.000 chiamate per assistenza (1-9 Gennaio 2024)

	BEV	ICE
Parco circolante	23%	77%
Quota chiamate per difficoltà nell'avviamento	13%	87%

Sources: <https://bit.ly/348e7yh>

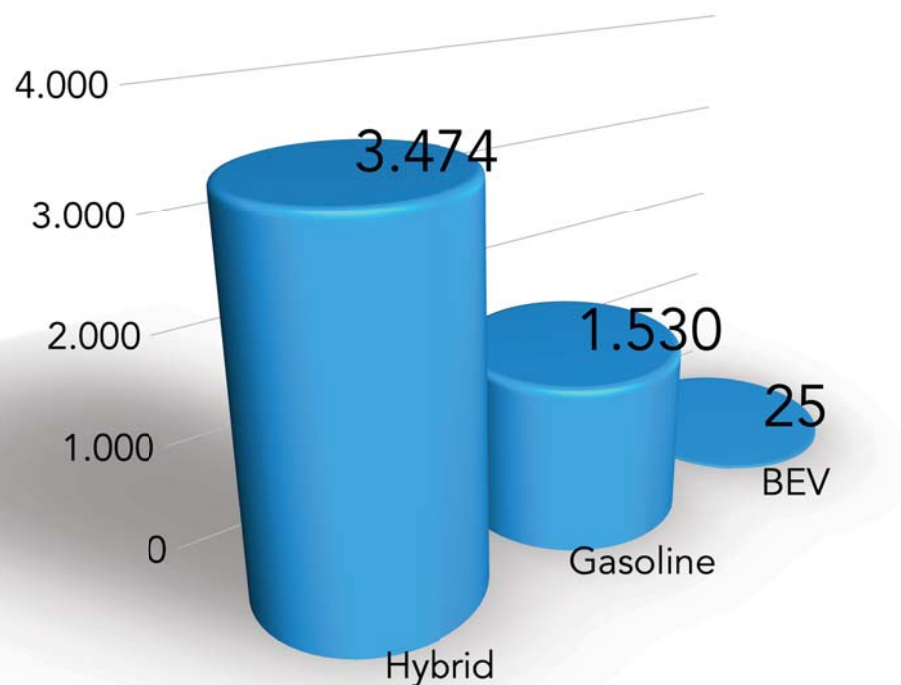
RANGE VARIATIONS



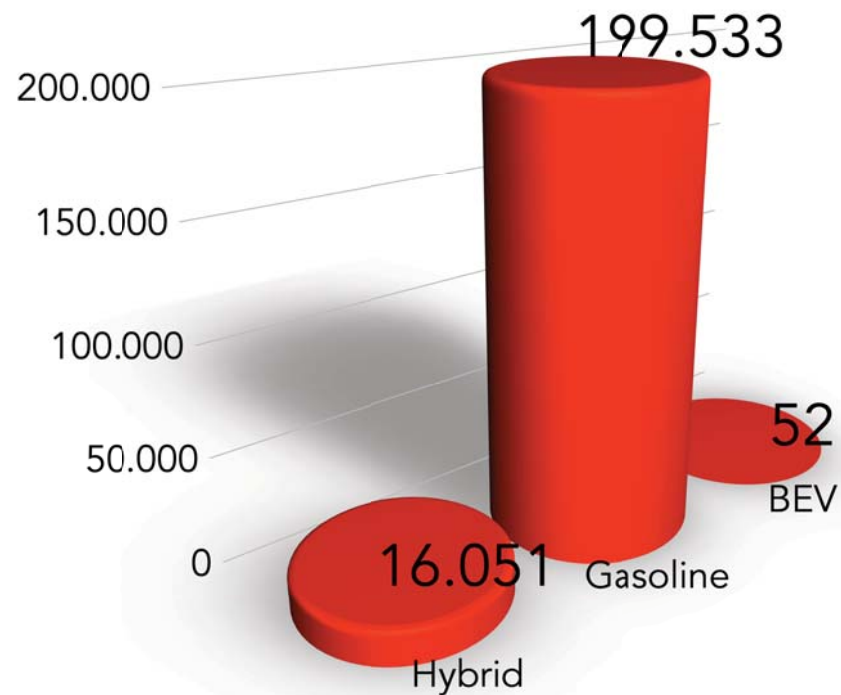


IL RISCHIO DI INCENDIO

Incendi per 100k immatricolazioni



Totale incendi



Fonte: AutoInsuranceEZ (U.S.A., 2021): <https://bit.ly/3Kz6ZeC>

DOMANDE

?

