



WORLD
RESOURCES
INSTITUTE

WRI ROSS CENTER FOR
SUSTAINABLE
CITIES



ELECTRIC
CLEANER AIR
FOR LONDON

I am an electric bus

Electrification of the transport sector: Current status

METROLINE TRAVEL LIMITED
COMFORT DELGRO HOUSE,
329 EDGWARE ROAD,
CRICKLEWOOD, NW2 6JP
ULW13500KGS

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The Urban Challenge

The risk of continuing as we go

**+2.5 billions
more people
in cities(63%)**

EXPECTED FOR 2050



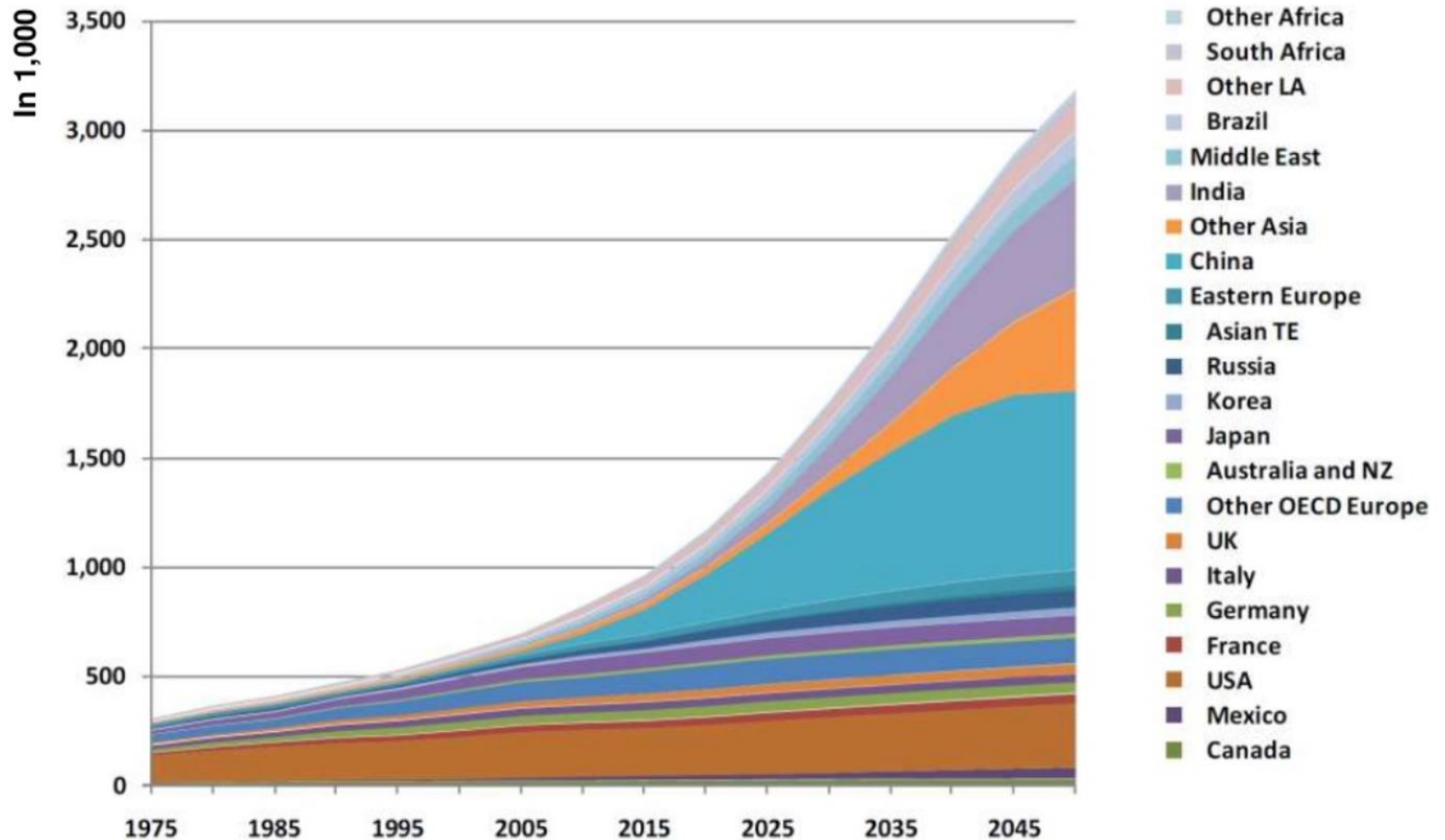
THERE ARE CURRENTLY ABOUT 1700 MILLION VEHICLES IN THE WORLD

AND IS EXPECTED TO INCREASE TO 3500 MILLION BY 2050



Sitty and Taft, "What will the global light-duty vehicle fleet look like through 2050?", 2016
Photo: Whitehotpix

WITH THE MAJORITY OF GROWTH OCCURRING IN DEVELOPING ECONOMIES



WHICH LEADS TO WASTED TIME



2-5% of losses in GDP due to vehicular congestion



SPACE LOSSES

7 million premature deaths in the world
caused by poor air quality



HEALTH LOSSES

THE URBAN POTENTIAL

An opportunity to do things right

80%
OF GLOBAL GDP
IN CITIES

\$5 TRILLIONS
ANNUAL NEEDS IN INVESTMENT IN
INFRASTRUCTURE IN THE NEXT 20
YEARS

75% OF
INFRASTRUCTURE STILL
TO BE BUILT

HOW DO WE TAKE ADVANTAGE OF THIS OPPORTUNITY?



A

S

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Avoid

Reduce trips

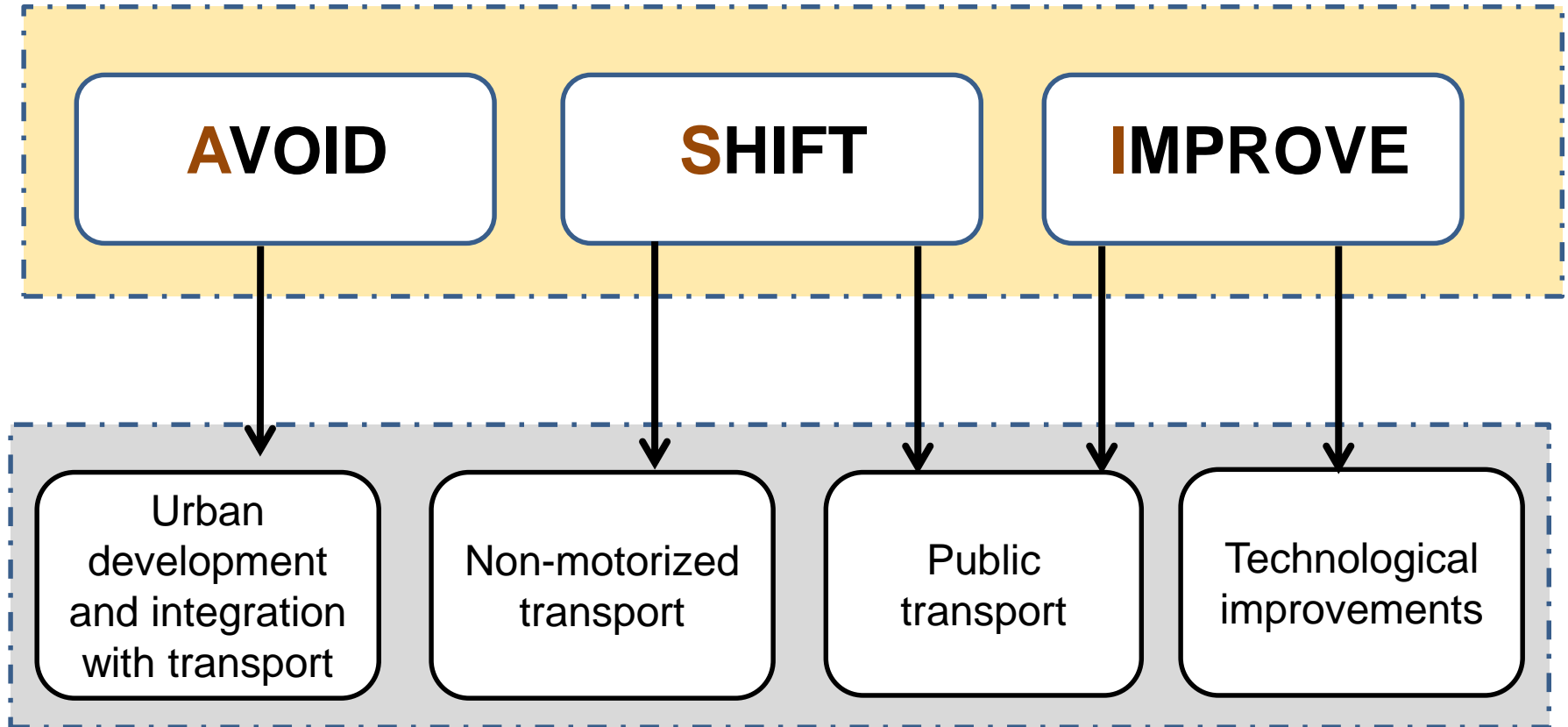
Shift

More sustainable modes

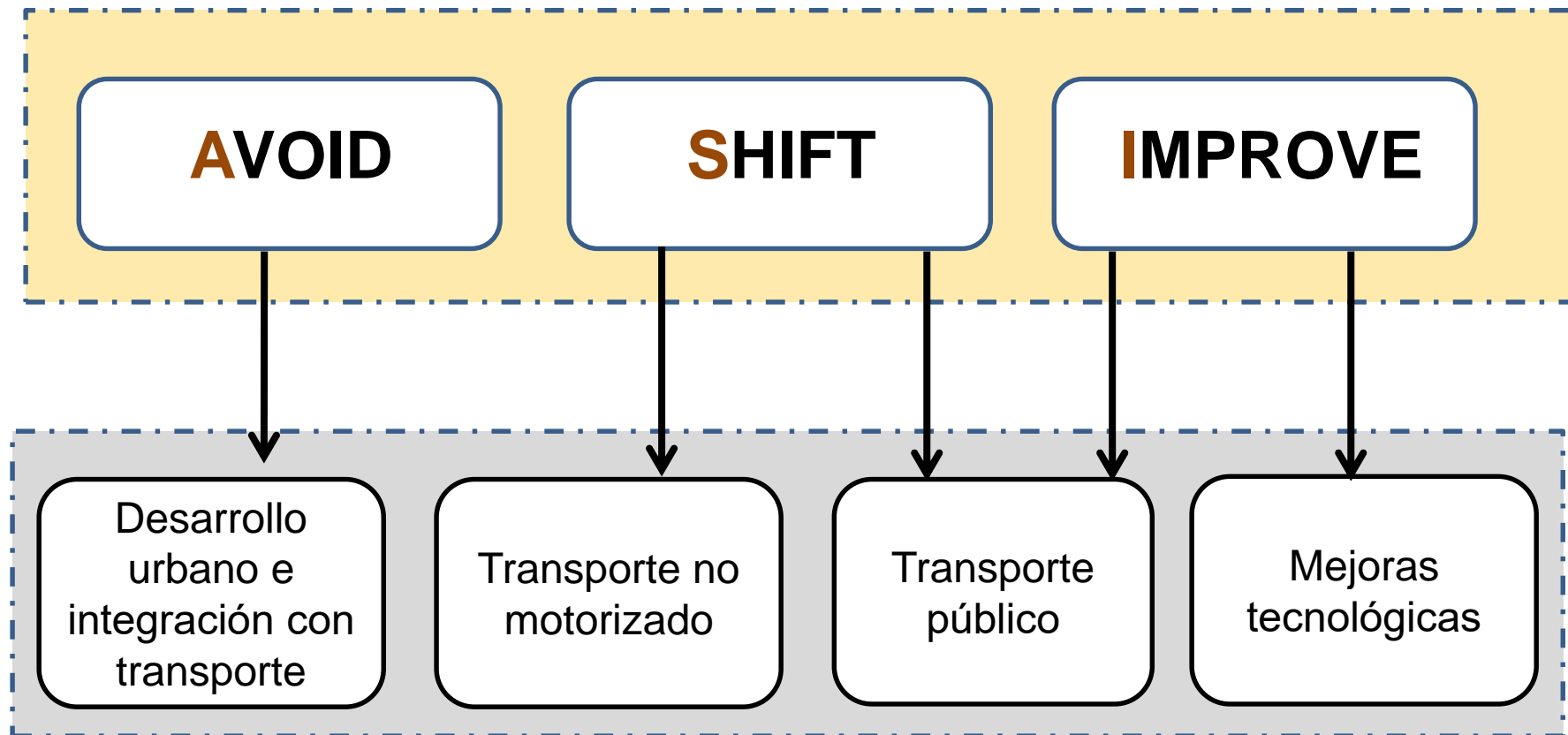
Improve

Vehicles and fuels


ASI



ASI



Better access for the most vulnerable
Less death, injuries, illnesses
Reducing energy consumption

An aerial photograph of a city, likely Los Angeles, with a dense urban landscape and mountains in the background under a hazy sky. The text is overlaid on the image.

The transport sector consumes more than half of the world's oil demand.

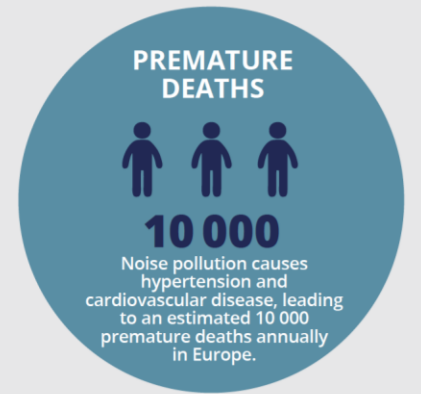
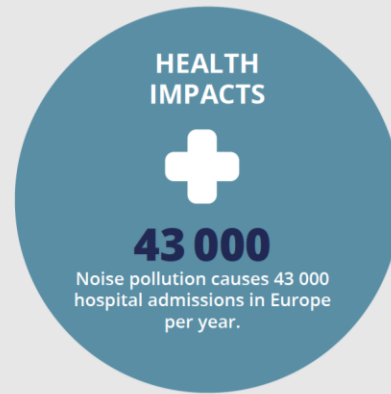
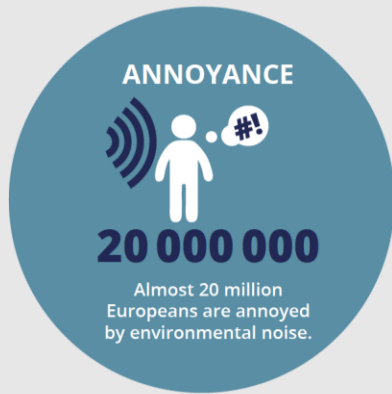
To achieve emissions mitigation goals and avoid increasing the global 2°C by 2050, transport must reduce between 1.7 and 2.5 GtCO₂ (10-15% of the total required)

NOISE IS A NEW GLOBAL CONCERN

Noise levels from road traffic that are greater than 55 dB L_{den} affect an estimated **125 million people** — **one in four Europeans**.

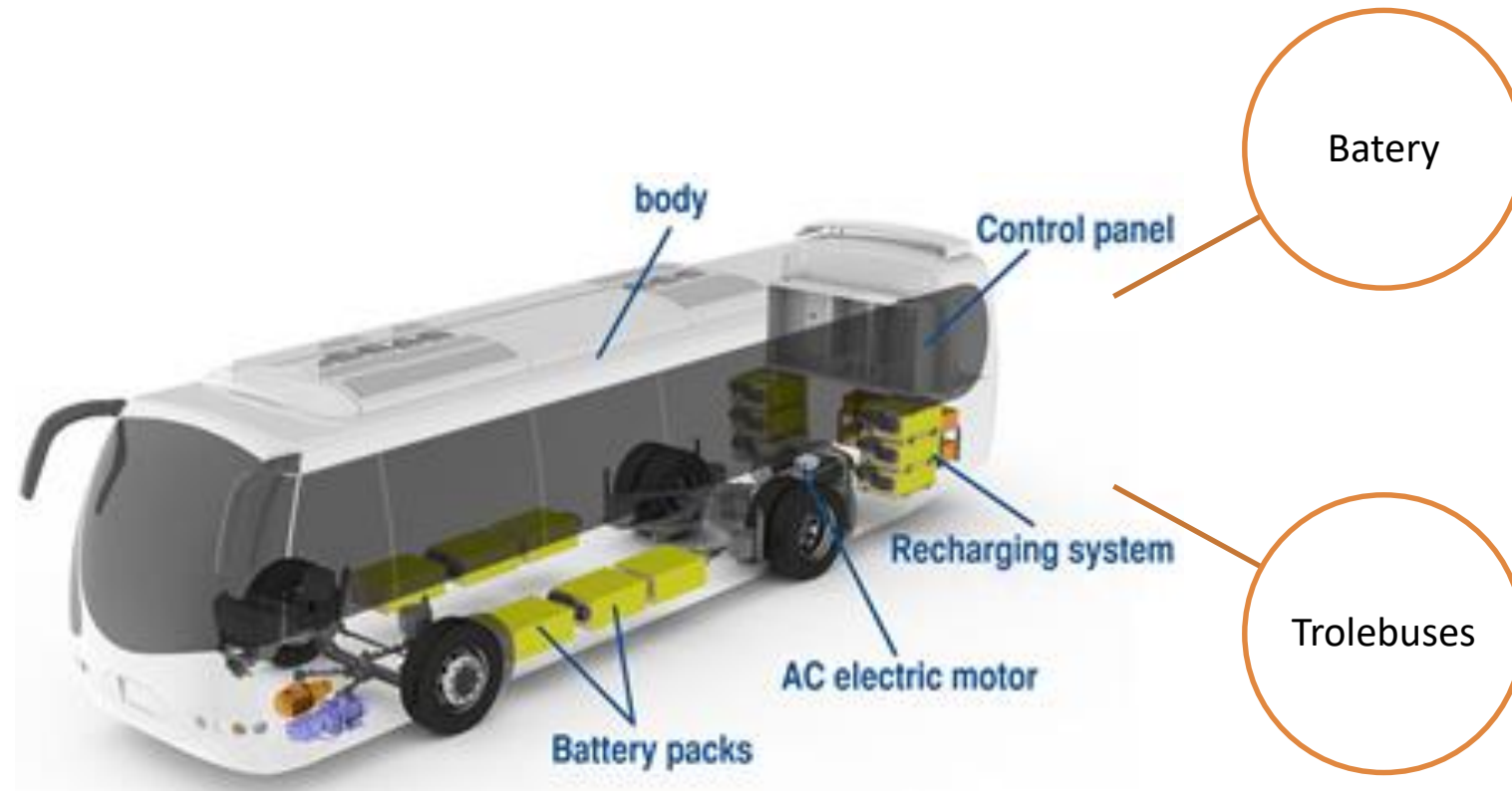


 **> 55 dB L_{den}**



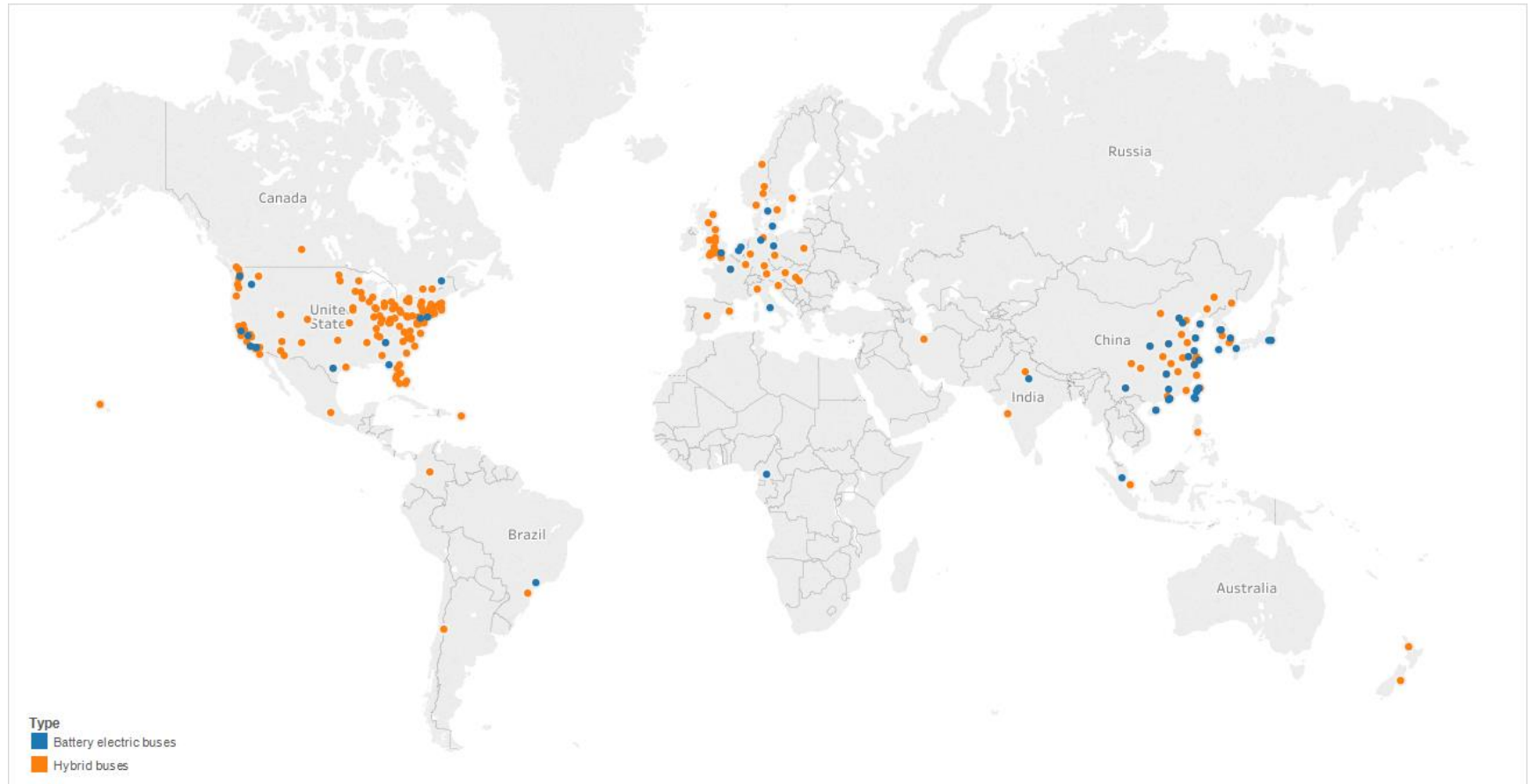
Fuente: EEA Report No 10/2014 Noise in Europe; www.eea.europa.eu/themes/noise.

ELECTRIC BUSES



- Slow loading
- Fast charge
- Opportunity load

THERE ARE ALREADY MORE THAN 300 CITIES THAT HAVE IMPLEMENTED ELECTRIC BUSES IN THEIR PUBLIC TRANSPORT FLEETS



BUT THERE ARE STILL SOME BARRIERS TO THE IMPLEMENTATION OF ELECTRIC FLEETS



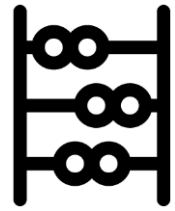
Most expensive infrastructure



Resistance to change



Technology performance
(eg battery range)



Hiring models not suitable

WITH FINANCIAL MECHANISMS THAT ADAPT TO NEW TECHNOLOGIES

- Innovating in other ways to pay for the most expensive assets - batteries, buses, infrastructure - using leasing and rental agreements
- Reducing the cost of financing with public guarantees
- Longer concession periods to pay the assets



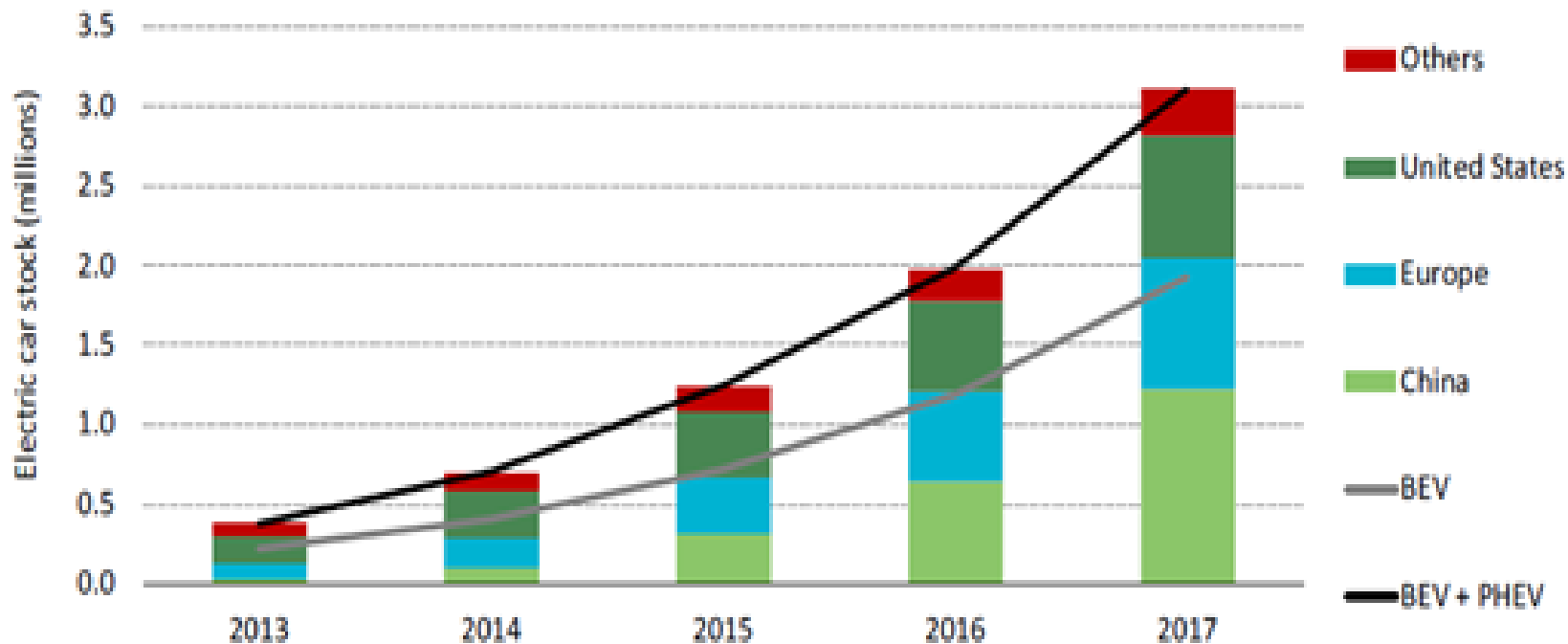
IN MOST REVIEWED CASES, THERE ARE GRANTS PROVIDED BY NATIONAL OR SUB-NATIONAL GOVERNMENTS

- Through public subsidies
CapEx
– OpEx
e.g. USA, London
- Tax incentives
Corporate taxes
Import tariffs
VAT



STOCK OF PLUG-IN ELECTRIC AND HYBRID VEHICLES IN THE WORLD

- More than 3 million plug-in electric and hybrid vehicles
- 40% of private vehicles and 90% of buses are in China
- Shenzhen, managed to transform the entire fleet to 100% electric in 6 years (16 thousand vehicles)



SHENZHEN, CHINA



World's largest electric
fleet

BEIJING, CHINA



**Battery tank and
replacement machine**



WRI BRASIL