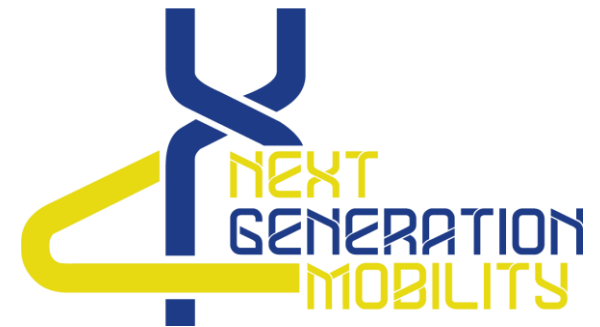


Il ruolo dell'idrogeno nella mobilità del futuro

Liberale De Rosa, 19/09/24



Bosch Group

Review of 2023



91.6

billion euros
sales revenue



429,416

Bosch associates
worldwide at year-end
(approx.)



470

subsidiaries and regional
companies in more than 60
countries

Bosch Group

Business Sectors



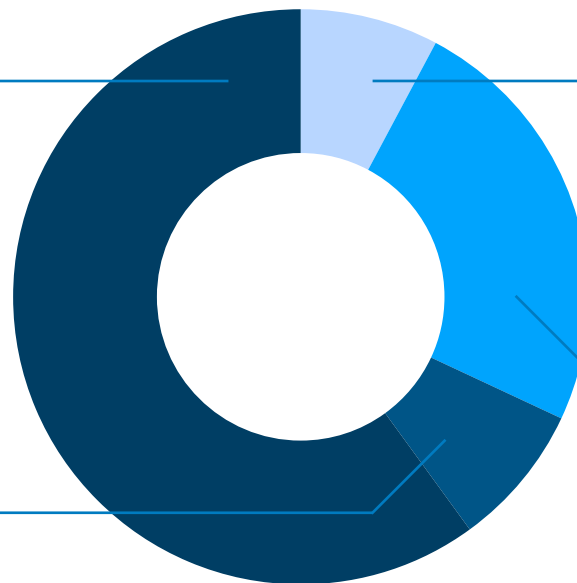
€56.2bn

Mobility
60%



€7.7bn

Energy and Building Technology
8%



€7.4bn

Industrial Technology
8%



€19.9bn

Consumer Goods
24%

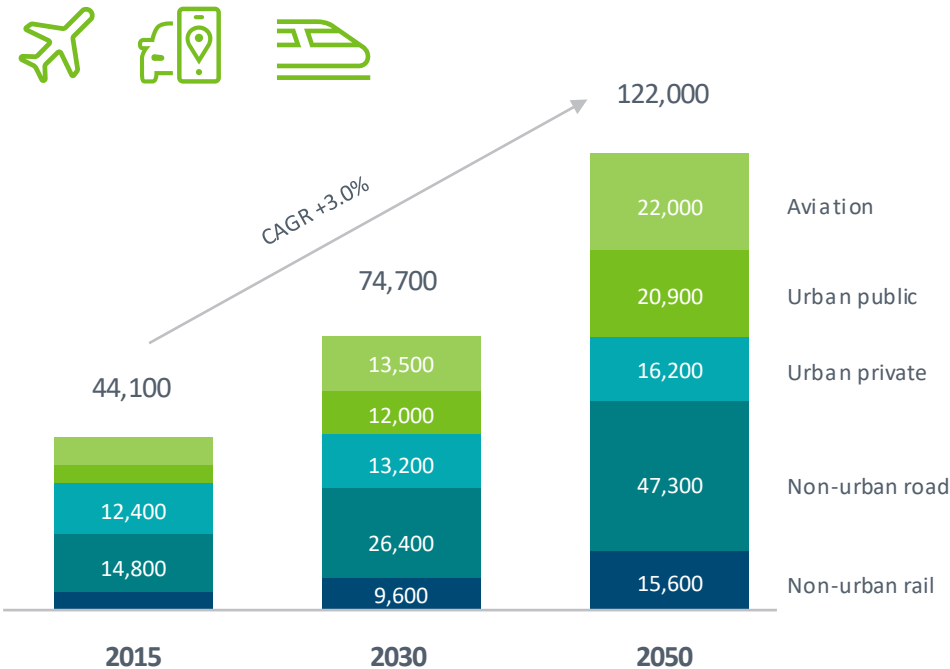


Bosch Mobility

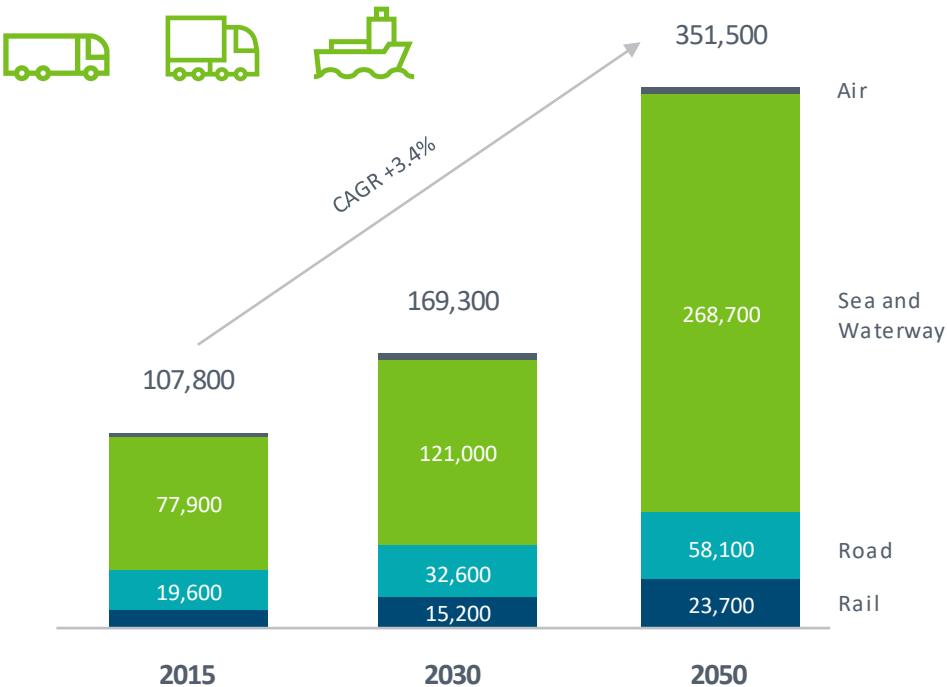
A forecast of the landscape by 2050

Source: ITF Transport CAGR: Compound Annual Growth Rate

Global demand for passenger transport by mode
(bn passenger-km)



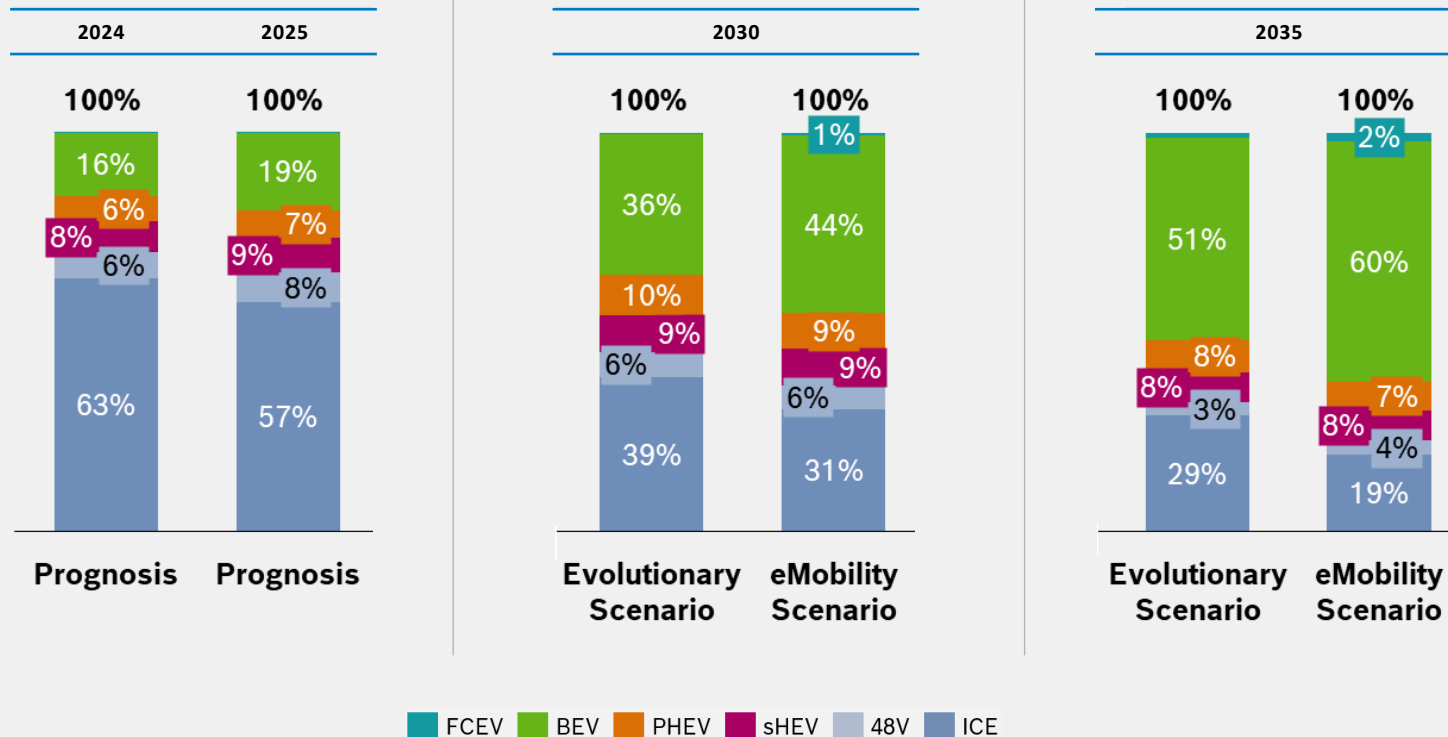
Freight transport demand by mode
(bn tons-km)



Transport is a growing global necessity

Bosch Mobility

Powertrain shares for PC/LCV



KEY MESSAGES

- By 2030, at least every 3rd new vehicle will be a BEV.
- However, in 2030 at least every 2nd new vehicle will still have an ICE.
- In 2035, we expect at least every 2nd new vehicle to be a BEV.

Note: difference to 100% due to rounding

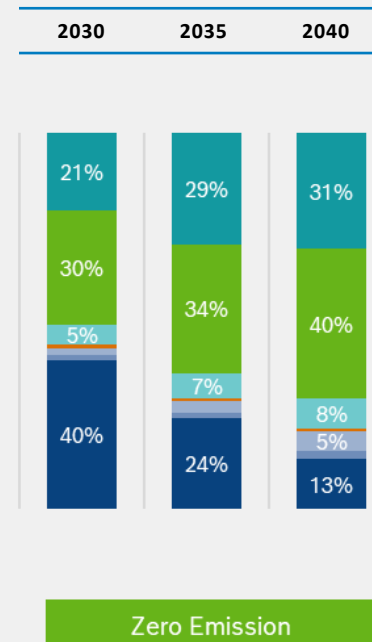
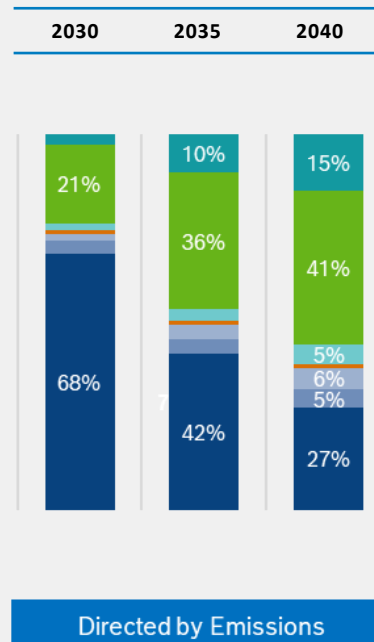
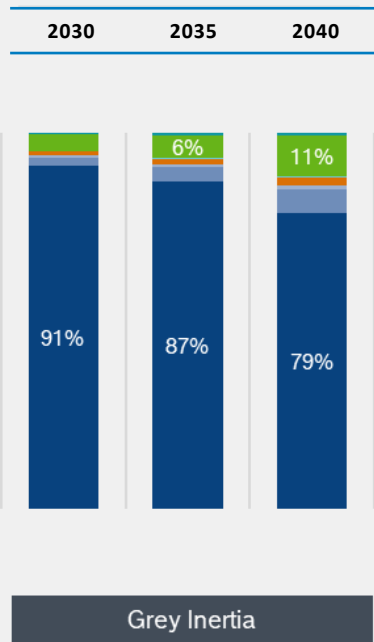
New vehicle sales PC incl. LCV < 6t | Worldwide

PC = Passenger Cars

LCV = Light Commercial Vehicle

Bosch Mobility

Powertrain shares for HD/MD



FCEV BEV H2 Engine NG PHEV_D HEV_D Diesel

KEY MESSAGES

- Achievement of Paris Agreement and regionally specific economic growth guide worldwide HCV scenario development.
- In heavy-duty applications, more technologies are involved compared to PC scenarios.
- FC breakthrough in ZeroE by low hydrogen price, infrastructure advancements and high CO2 tax



Note: difference to 100% due to rounding

HD = Heavy Duty

MD = Medium Duty

Bosch Mobility

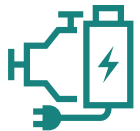
The importance of powertrain mix



Hydrogen



Synthetic fuels



Hybrid technologies



Electric vehicles



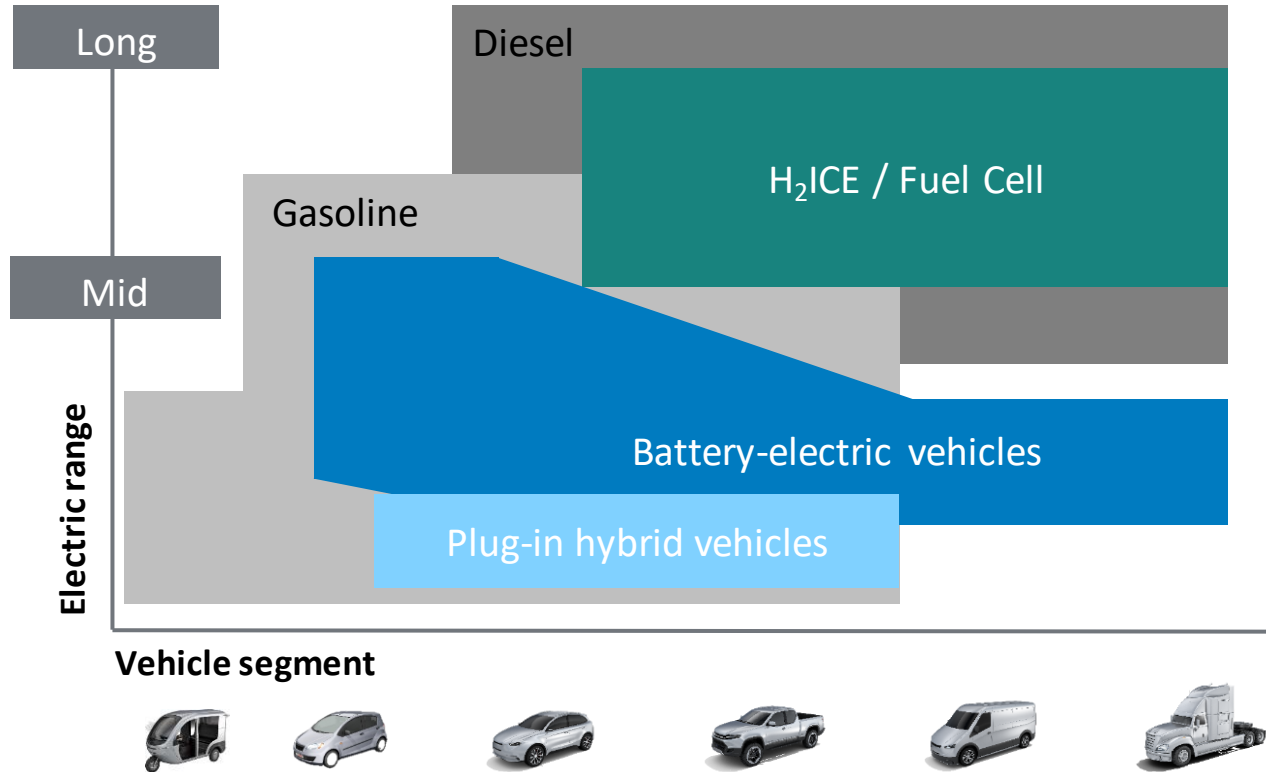
Gasoline



Diesel

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Technology Neutrality



H₂ for Commercial Vehicles

- Hydrogen is a solution for **long-distance** transport
- Hydrogen has a higher energy density compared to batteries, allowing for **lighter vehicles** and more cargo capacity.
- Fast refueling times comparable to traditional fuels, unlike the longer **charging times** required for electric batteries.
- Greater range for long-distance routes without the need for frequent **charging** stops.

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Technology for mobility



Components for H₂ ICE

Fuel Cell
systems and components



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Focus on the whole value chain



PRODUCTION

STORAGE &
DISTRIBUTION

USAGE

Bosch Mobility

Electrolyzer Stack for green Hydrogen



1.25 MW
maximum power



~50 kWh/kg H₂
maximum efficiency



23 kg/h
H₂ output at full load

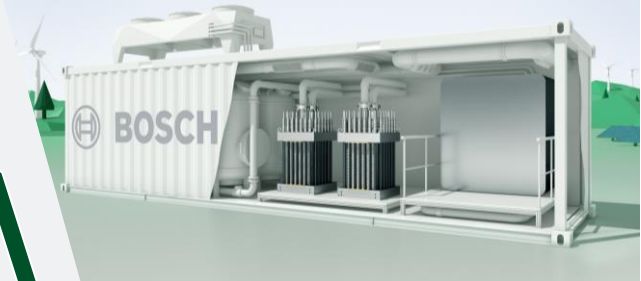


> 30 bar
H₂ output pressure



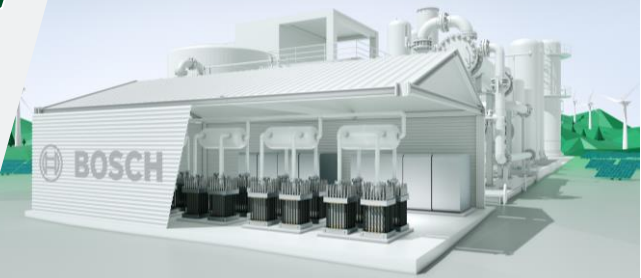
Containerized solutions

1.25 MW to 5 MW per container



Plant solutions

plants from 10 to 1000 MW



Bosch Mobility

Key Messages

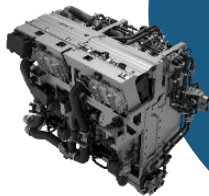
Market Evolution

The mobility market is rapidly evolving, requiring shared sustainability efforts.



Powertrain Mix and Technological Neutrality

Bosch supports a balanced powertrain mix and technological neutrality.



Solutions for Mobility

Bosch develops mobility solutions, including fuel cells and H₂ICE components.



Whole Value Chain Development

Addressing the entire hydrogen value chain is fundamental.



Importance of Electrolyzers

Electrolyzers are key for green hydrogen production.

