# The Global Electric Vehicle Market

**Trends and outlook**

Nikolas Soulopoulos
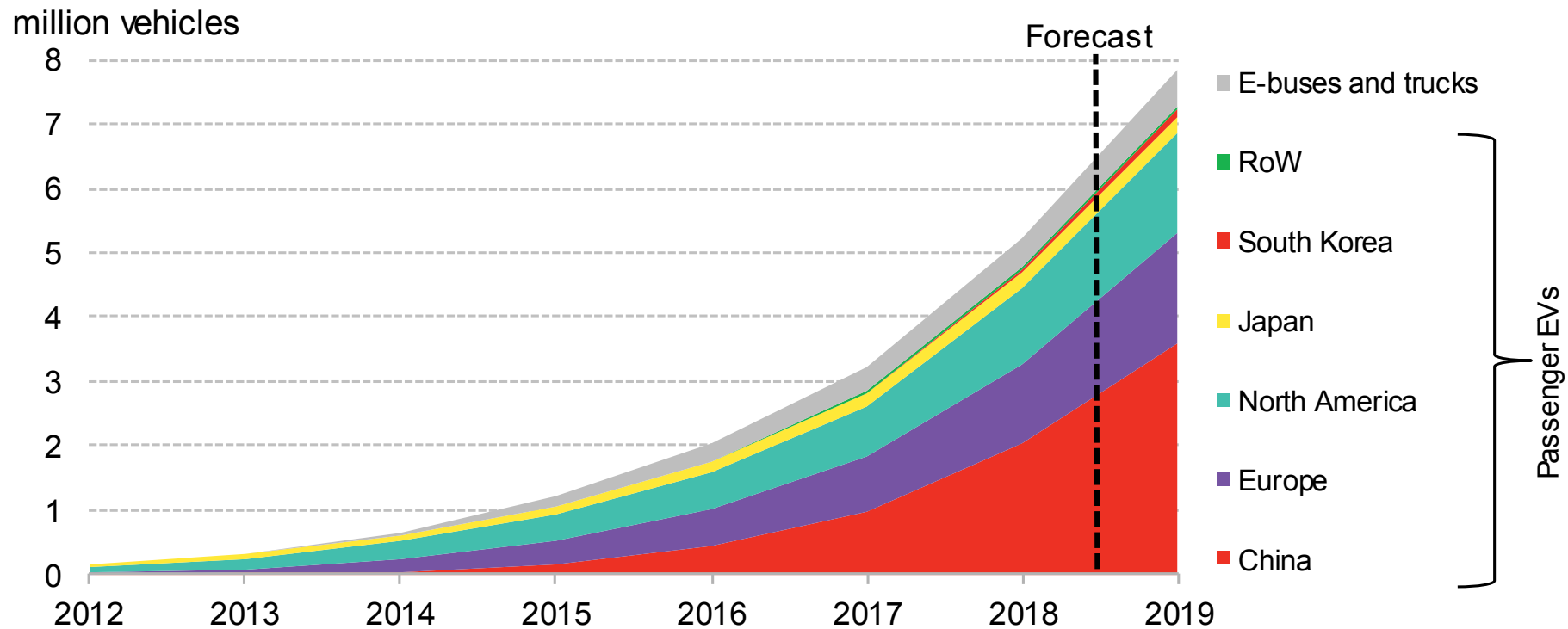
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BloombergNEF

# Strategies for a cleaner, more competitive future



**Commodities**
- Carbon
- Power markets
- Oil & products
- Chemicals
- Gas & LNG
- Metals

**Advanced transport**
- Electrified transport
- Mobility services
- Connected & autonomous vehicles
- Impact on transport
- Impact on oil & power

**Digital industry**
- IoT technologies & platforms
- Advanced analytics & automation
- Digital business model evolution
- Digitalization of energy, industry & supply chains

**Clean energy**
- Solar
- Wind
- Storage
- Heat
- Frontier power
- Decentralized energy
- Impact on power & utilities

**Advanced materials**
- 3D printing & green manufacturing
- Sustainable materials & circular economy
- Composites, bioplastics, & new materials
- Impact on industrials, utilities & manufacturing

**Policy Economics & forecasts**

**Sustainability, Innovation & Tech Finance**

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# There are now over 6 million EVs on the road

million vehicles



Source: BloombergNEF

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# ...BUT EVs are still only 2-4% of sales in most markets



China, Europe, North America, Japan, Korea
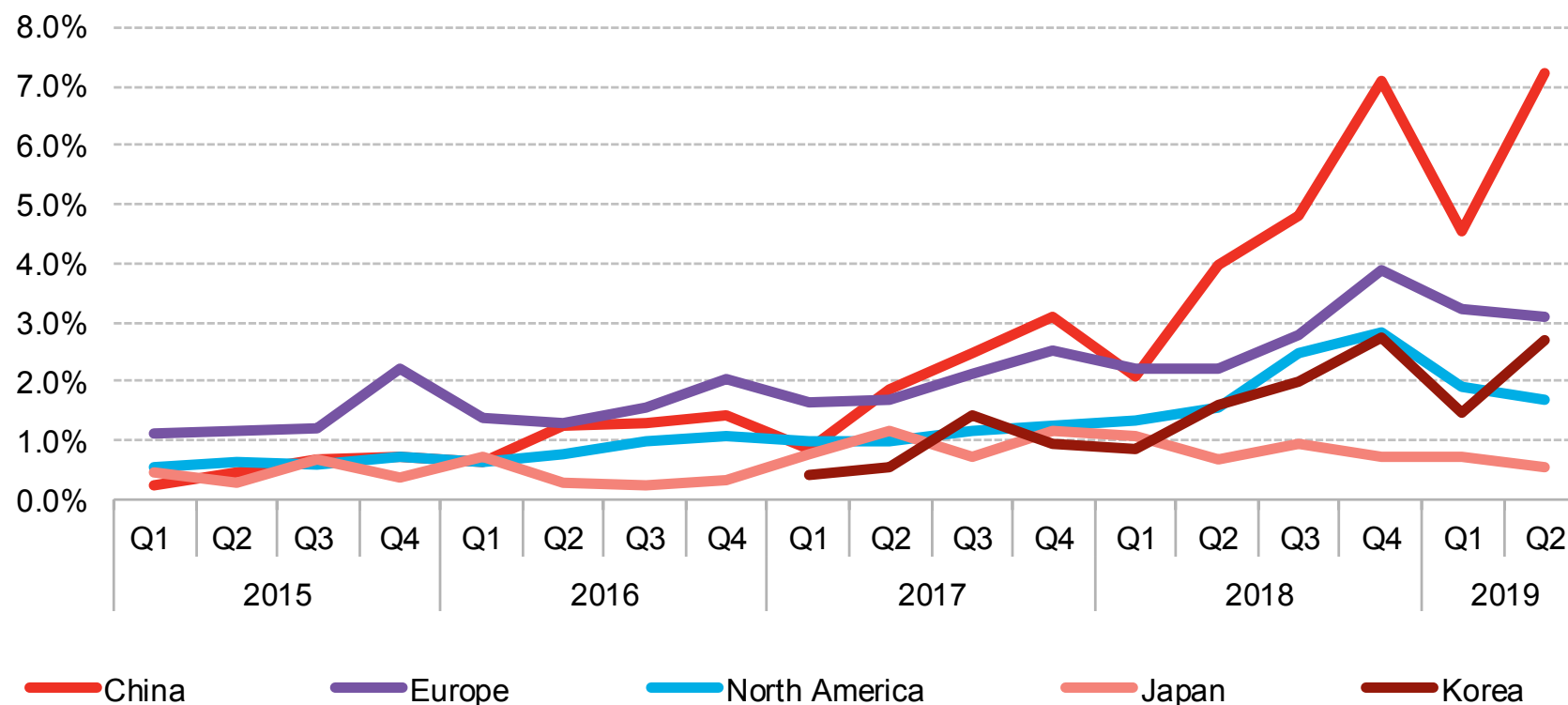
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# The largest driver is still policy, but is moving away from direct subsidies

**China**

**New Energy Vehicle (NEV) credit system**
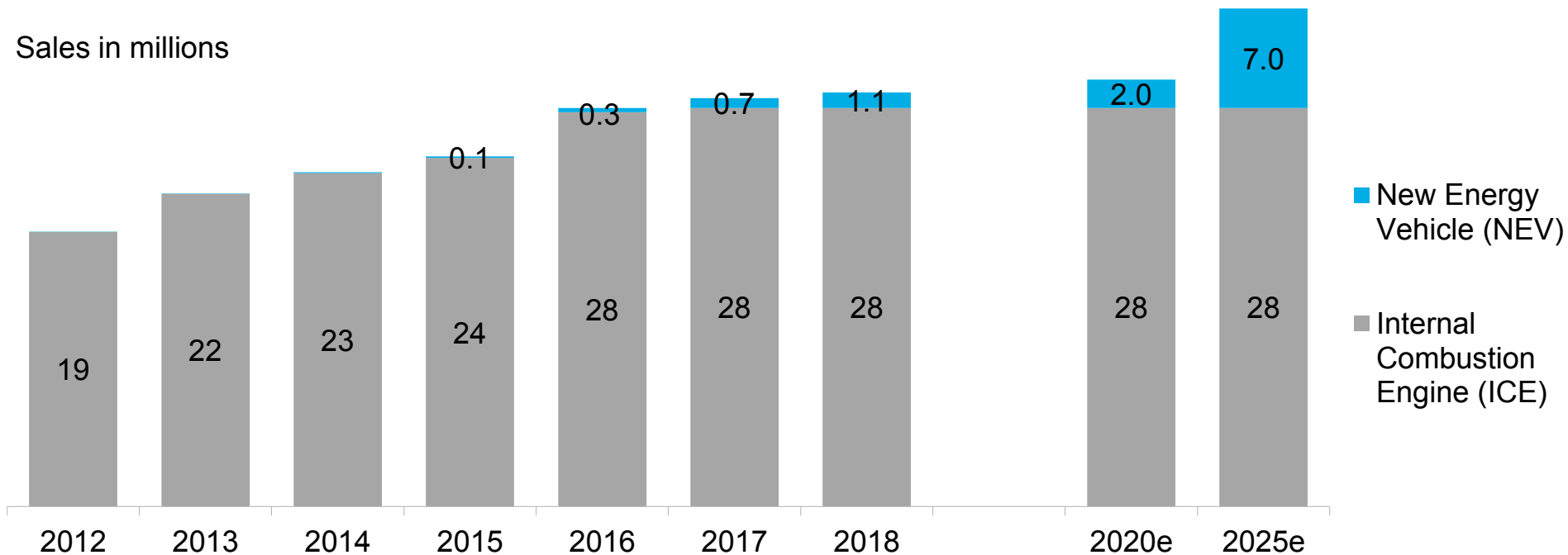
**Europe**

**EU Parliament's CO2 emissions target**

**U.S.**

**Corporate Average Fuel Economy (CAFE) regulations**

*Source: BloombergNEF*

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# China vehicle sales targets in the 2025 auto plan

Sales in millions



Legend:
- New Energy Vehicle (NEV)
- Internal Combustion Engine (ICE)

Data by year:

| Year | ICE | NEV |
|------|-----|-----|
| 2012 | 19 | |
| 2013 | 22 | |
| 2014 | 23 | |
| 2015 | 24 | 0.1 |
| 2016 | 28 | 0.3 |
| 2017 | 28 | 0.7 |
| 2018 | 28 | 1.1 |
| 2020e | 28 | 2.0 |
| 2025e | 28 | 7.0 |

*Source: MIIT, NDRC, BloombergNEF. Note: NEV target includes both passenger and commercial vehicles.*

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# More public EV charging infrastructure is being installed

Thousand outlets



Legend:
- RoW
- Japan
- U.S.
- Europe
- China
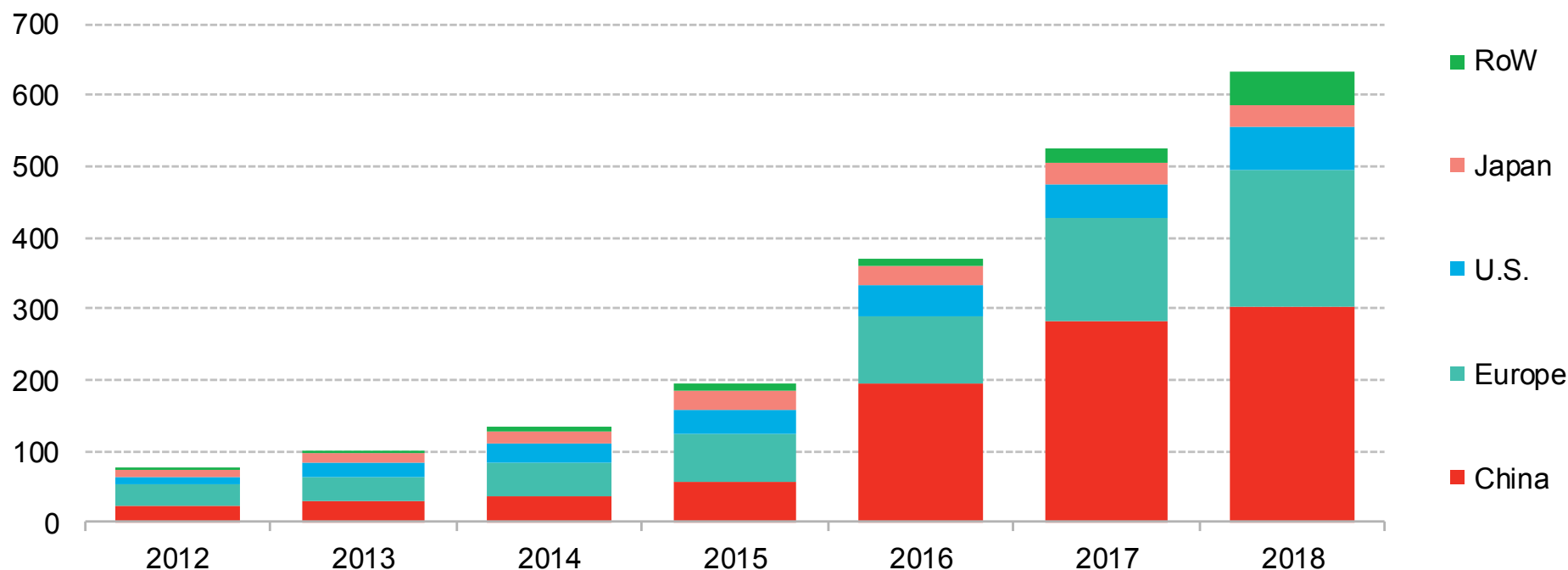
*Source: BloombergNEF*

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# Battery manufacturing capacity will grow 3x by 2025
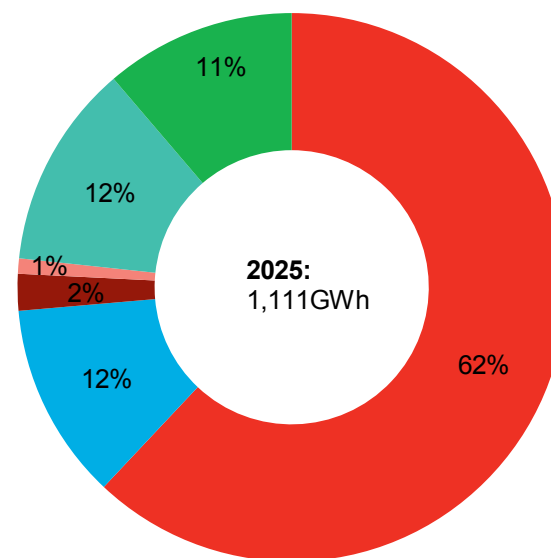
## Battery manufacturing capacity – 2019
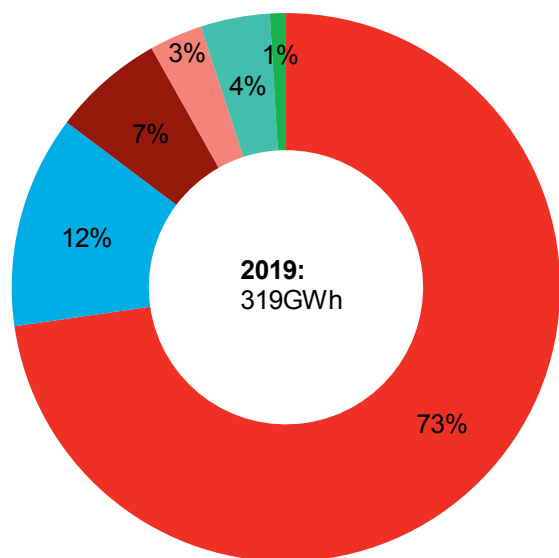


2019:
319GWh

73%
12%
7%
3%
4%
1%

■ China  ■ U.S.  ■ South Korea  ■ Japan  ■ Europe  ■ Other

*Source: BloombergNEF Note: this is nameplate capacity and utilization may be lower*
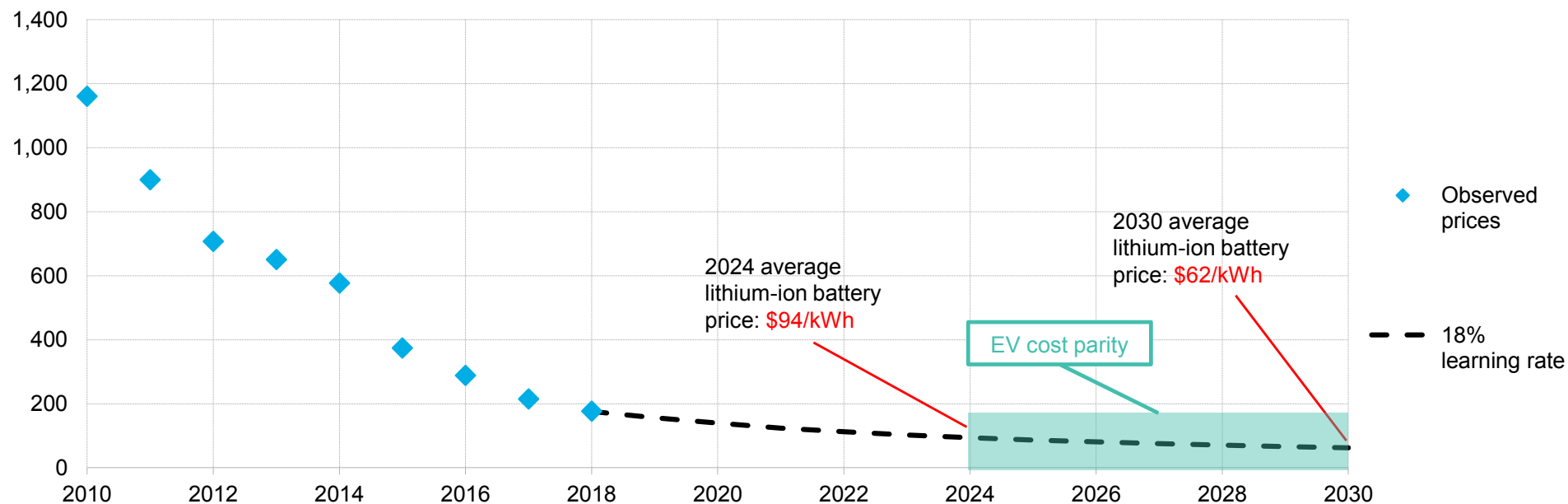
## Battery manufacturing capacity – 2025



2025:
1,111GWh

62%
12%
2%
1%
12%
11%

■ China  ■ U.S.  ■ South Korea  ■ Japan  ■ Europe  ■ Other

*Source: BloombergNEF Note: this is nameplate capacity and utilization may be lower*

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# We expect battery prices to continue to fall – below $100/kWh by 2024

Lithium-ion battery pack price (real 2018 $/kWh)



2024 average lithium-ion battery price: $94/kWh

2030 average lithium-ion battery price: $62/kWh

EV cost parity

◆ Observed prices

- - - 18% learning rate

*Source: BloombergNEF. Note: Prices have been changed to real 2018 dollars*

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# Price parity is coming

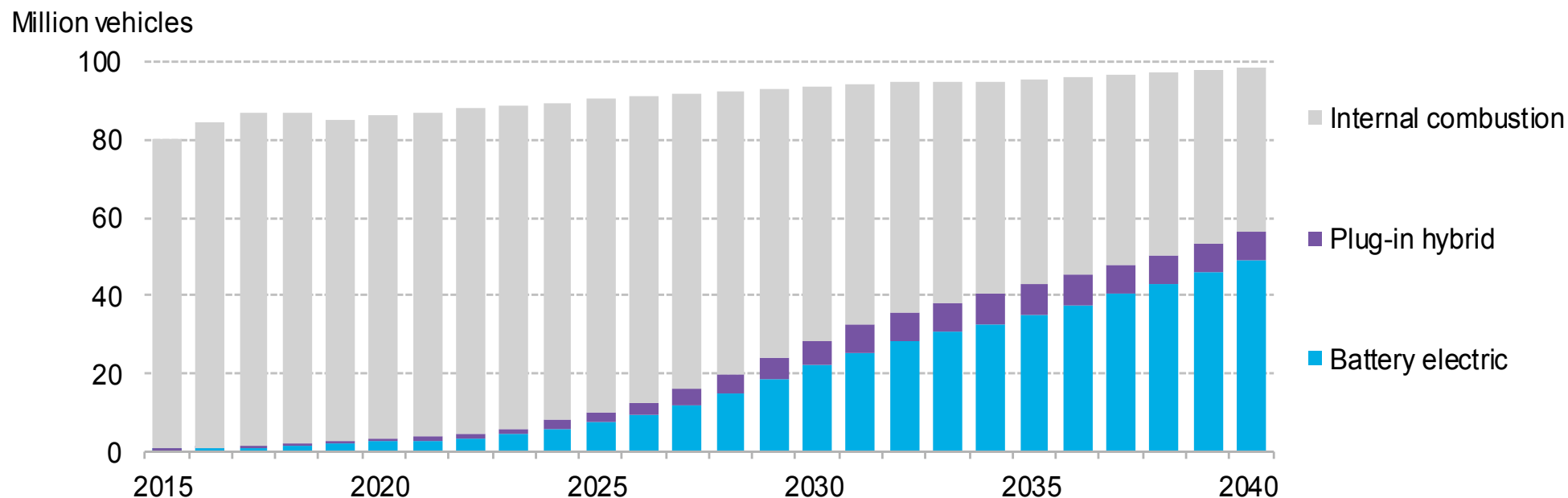**Europe: pre-tax retail price for a medium-segment combustion vehicle vs. a BEV**

real 2018 thousand dollars and %
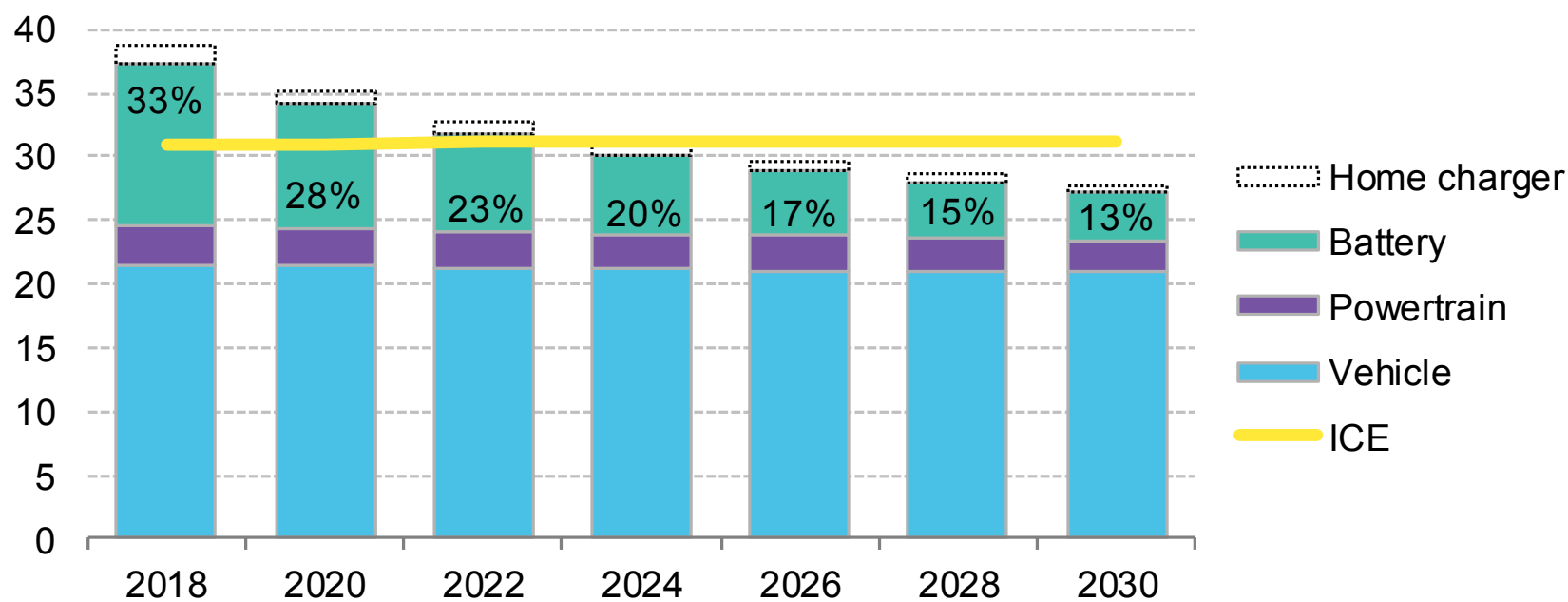


Source: BloombergNEF 2019 EV Outlook

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# Passenger EVs hit 57% of new vehicle sales globally in 2040

**Global long-term passenger vehicle sales by drivetrain**

Million vehicles



Legend:
- Internal combustion (grey)
- Plug-in hybrid (purple)
- Battery electric (blue)

*Source: BloombergNEF*

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# Shared mobility takes a bite

●5%

Proportion of all passenger kilometres done in shared mobility in **2018**

●19%

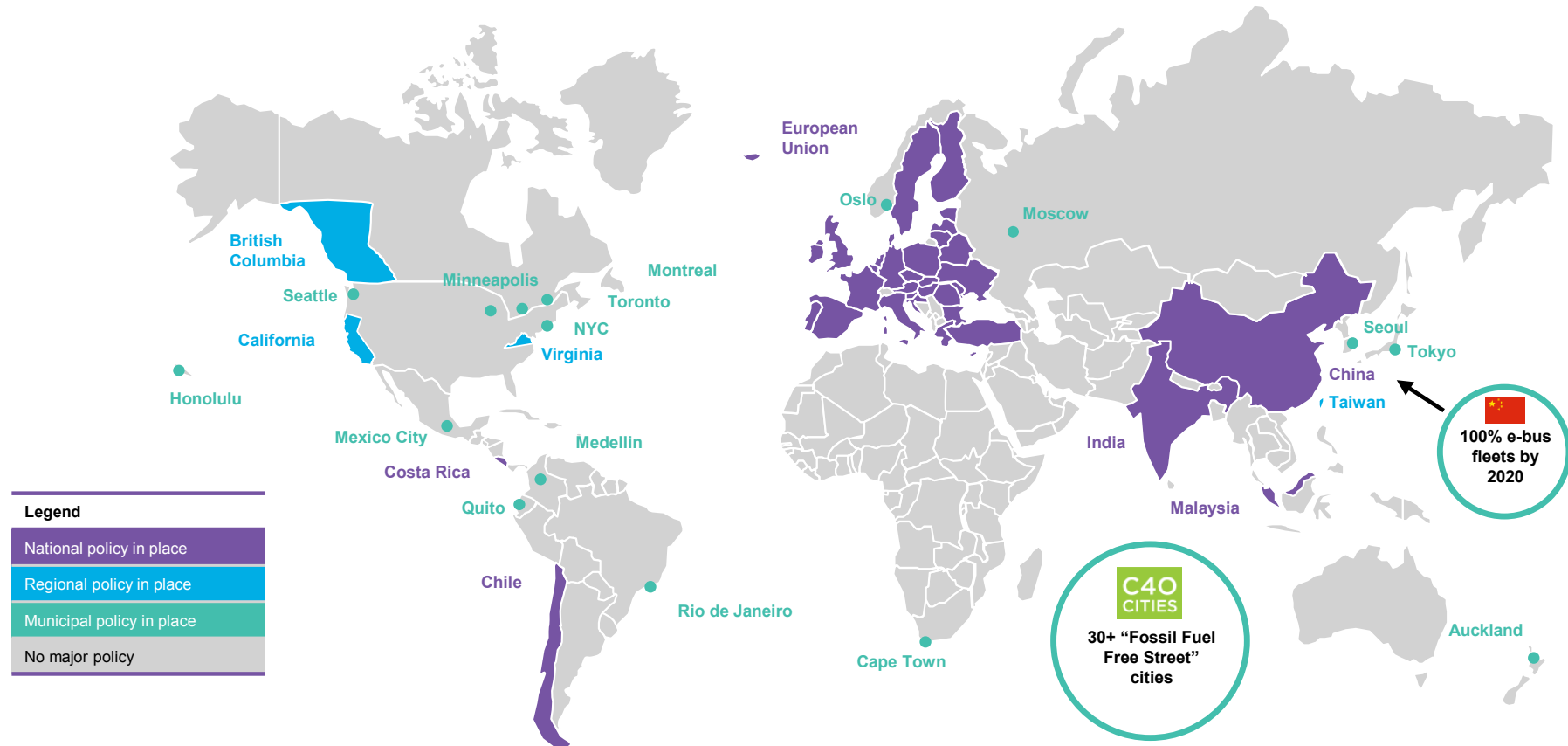Proportion of all passenger kilometres done in shared mobility in **2040**



Uber  mytaxi  DiDi

*Source: BloombergNEF, Bloomberg Media Source, Didi, mytaxi, Uber*

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**Buses go electric faster**

# Buses go electric faster



**Legend**

| National policy in place |
| --- |
| Regional policy in place |
| Municipal policy in place |
| No major policy |

**British Columbia**
**Seattle**
**California**
**Honolulu**
**Minneapolis**
**Montreal**
**Toronto**
**NYC**
**Virginia**
**Mexico City**
**Costa Rica**
**Quito**
**Medellin**
**Chile**
**Rio de Janeiro**
**European Union**
**Oslo**
**Moscow**
**Cape Town**
**India**
**Malaysia**
**China**
**Taiwan**
**Seoul**
**Tokyo**
**Auckland**

**100% e-bus fleets by 2020**

**C40 CITIES**
**30+ "Fossil Fuel Free Street" cities**

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# Other segments can also offer scale

Annual global two-wheeler sales:

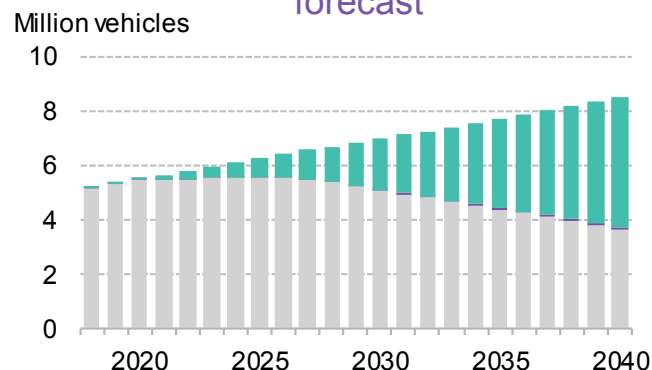**70 million**

EV share:

**30%**

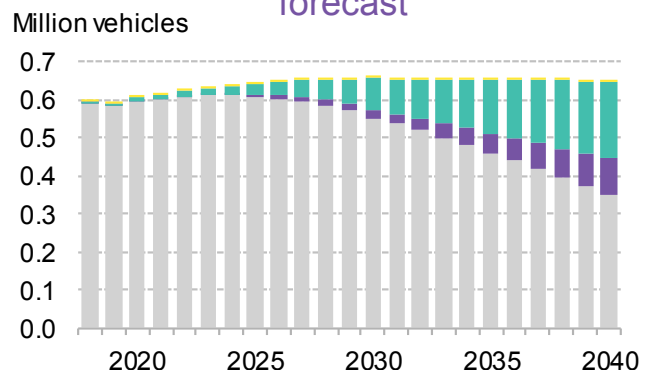*Source: BNEF, various national sources. Image source: Niu*

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# Commercial vehicles: light and medium go electric, heavy vehicles are harder
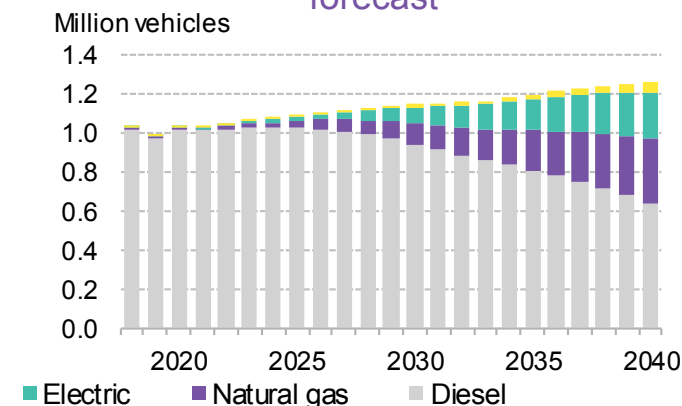


### Light commercial vehicles forecast

Million vehicles



### Medium commercial vehicles forecast

Million vehicles



### Heavy commercial vehicles forecast

Million vehicles

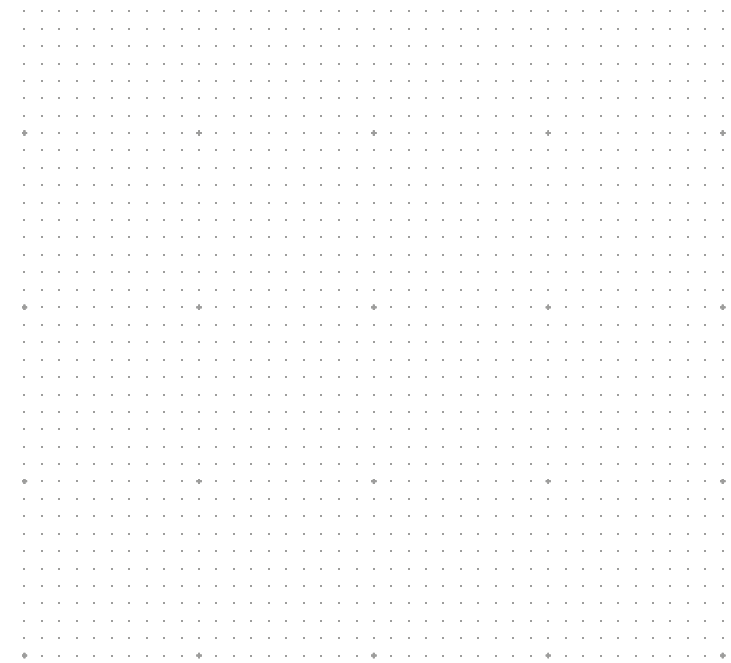*Source: BloombergNEF Note: Sales correspond to the U.S., Europe and China only*
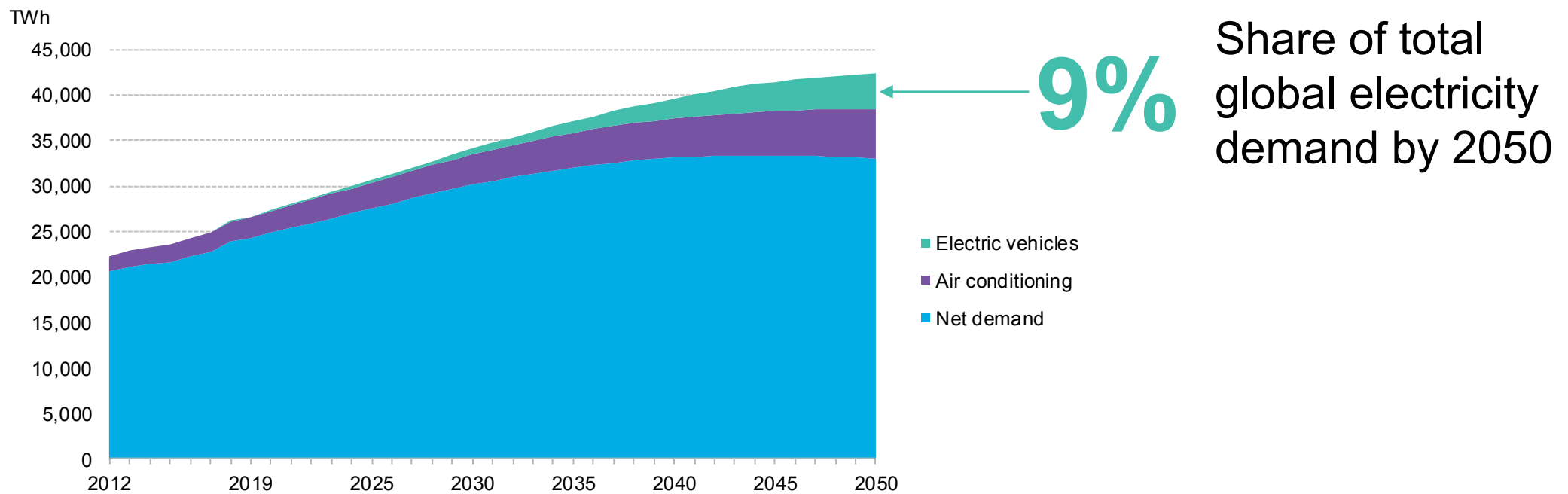
Hydrogen ■ Electric ■ Natural gas ■ Diesel

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# Impacts

**Electricity demand, emissions and risks**

BloombergNEF

# Looking ahead: impact on electricity markets is varied

TWh



**9%** Share of total global electricity demand by 2050

Legend:
- Electric vehicles
- Air conditioning
- Net demand

*Source: BloombergNEF New Energy Outlook 2019*

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# Oil-demand outlook

## Demand declines by 1.4MMbd combined

Light and heavy-duty vehicles



MMbd

Demand projection assuming no alternative drive trains or fuel economy improvements

Demand reduced due to FE improvements

-9.9MMbd

-14.5MMbd

Demand reduced due to alternative drive trains and shared mobility

Diesel

Gasoline

LDV

HDV
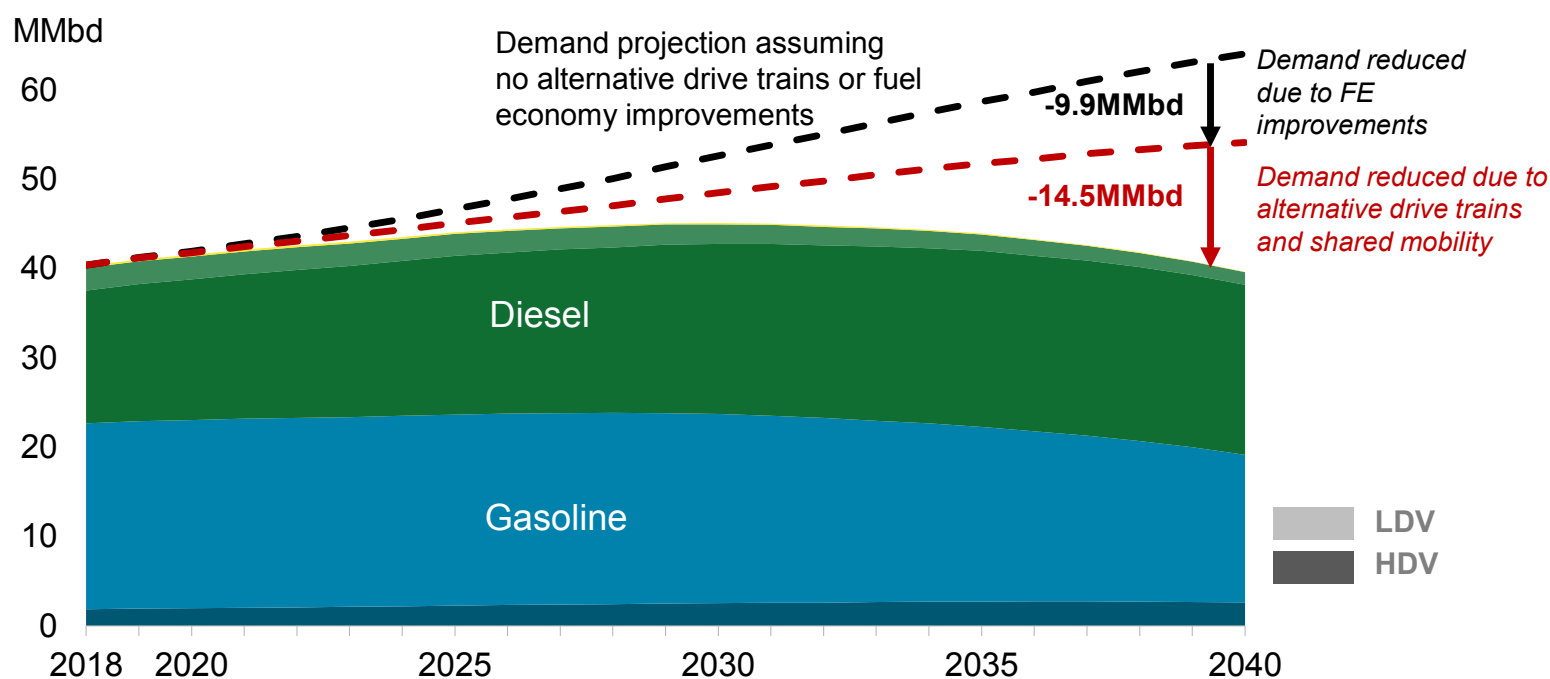
*Source: BloombergNEF. Note: Excludes buses, two and three wheelers*

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# Thank you

**Find the public executive summary of BNEF's "Long-Term Electric Vehicle Outlook 2019" at about.bnef.com and the full report on the Bloomberg Terminal**



Electric Vehicle Outlook 2019

BNEF's annual forecast of electric vehicles, shared mobility and road transport to 2040.

VIEW THE FREE INTERACTIVE REPORT

*Source: BloombergNEF*

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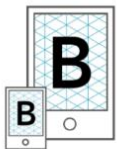
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