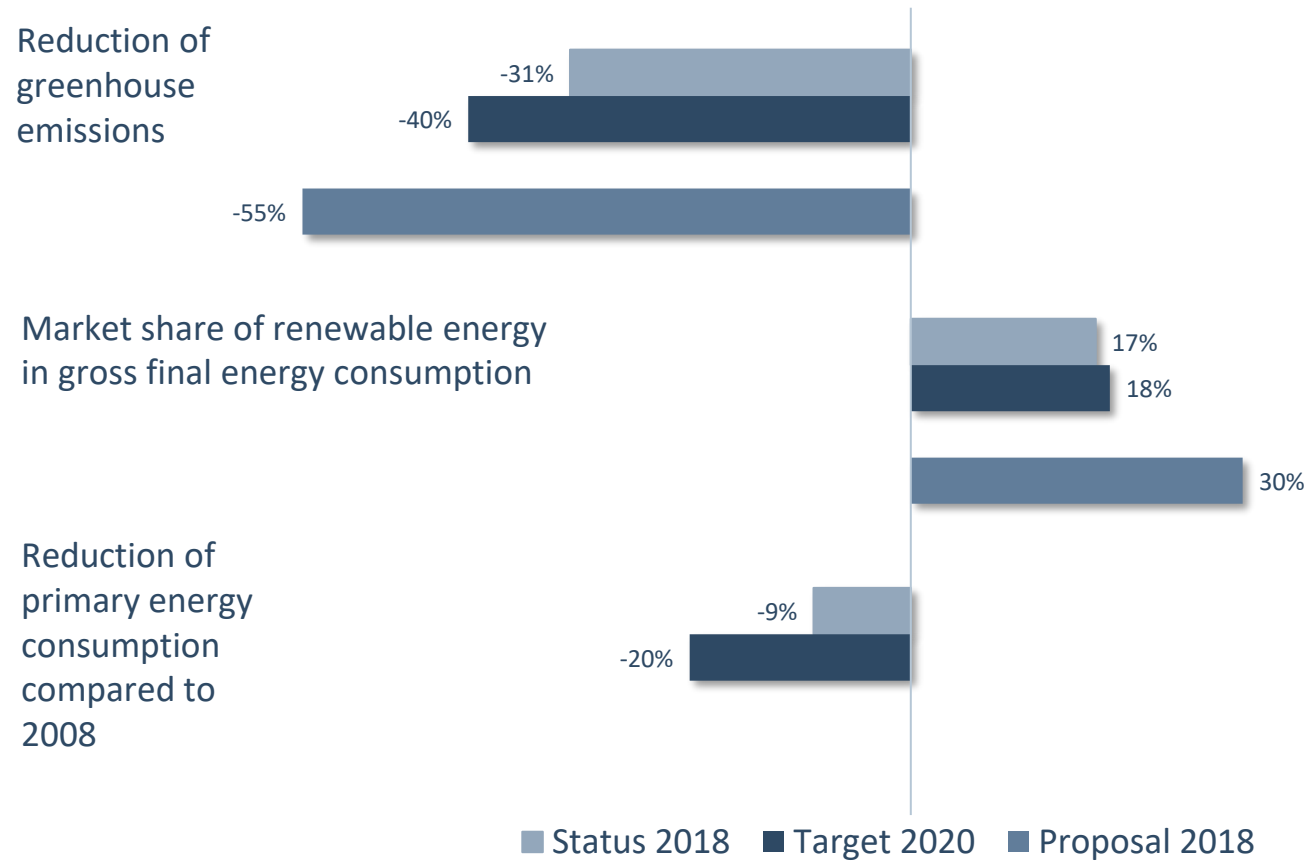




# 10 years faster: The German government goes beyond the EU targets

Reduction aims of the der federal government in percent – base year 1990

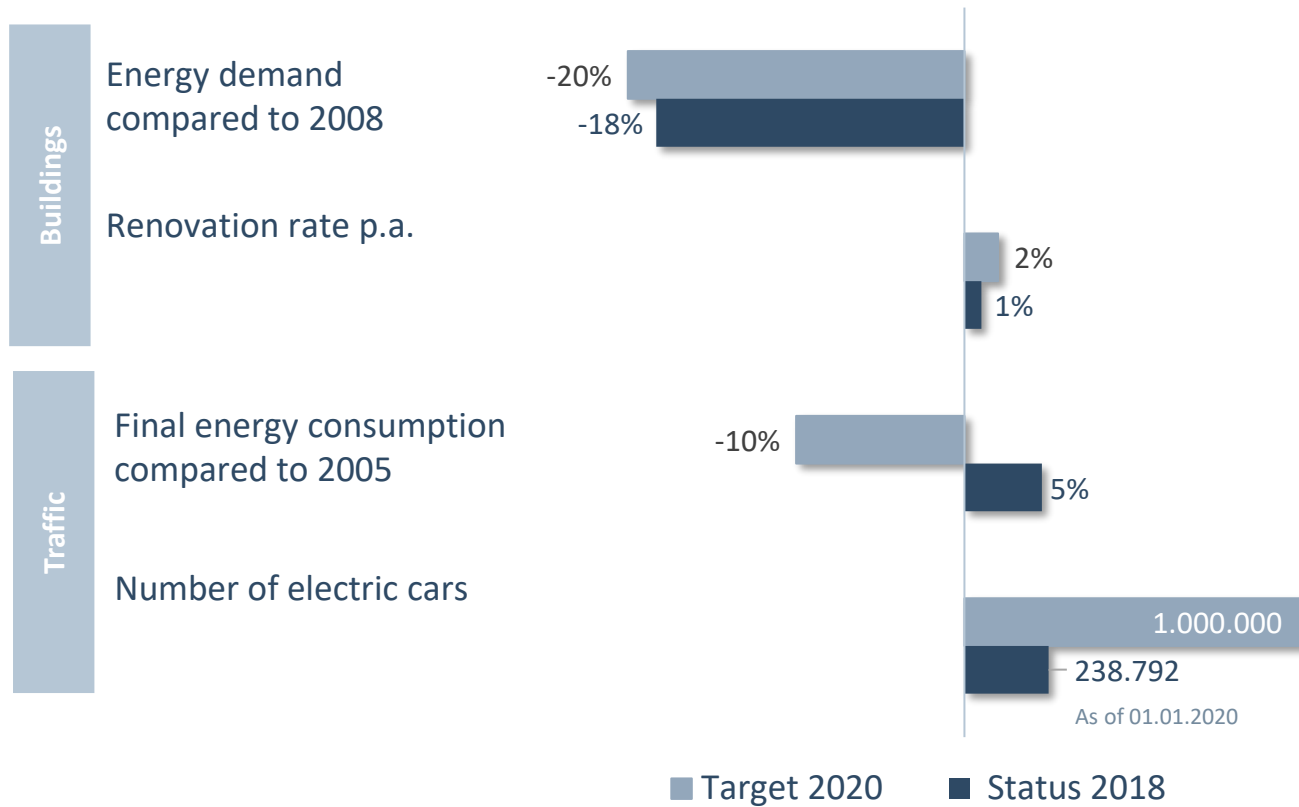


- ▶ The Federation currently demands additional efforts, to reach the target for 2020.
- ▶ The required pace of change will be drastically increased for the period after 2020.

Sources: BMWi, UBA, AGEB

# Buildings and transport

Reduction targets of the federal government in percent



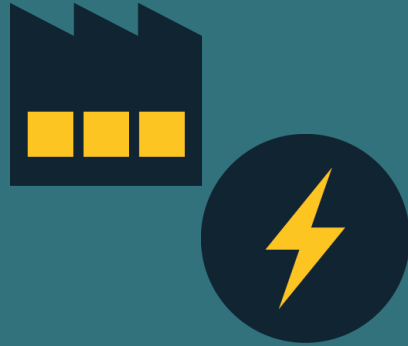
- ▶ The federal government's target value for road traffic is at 136 - 141 Mio. t CO<sub>2</sub>; As of 2018: 157 Mio. t CO<sub>2</sub>.
- ▶ The building sector is very likely to miss its target.
- ▶ On January 1st, 2020, 136.617 pure electric cars and 102.175 plug-in-hybrids were registered in Germany.

Sources: BMWi, IW Köln, KBA, UNFCCC, AGEB

# Differences between emissions trading systems

Market instruments with different framework conditions

## EU-ETS



- › Market participants themselves have avoidance possibilities. No price corridor, price is formed by trading the certificates.
- › It is possible to hold the certificates beyond the annual limit (banking).

## National emissions trading

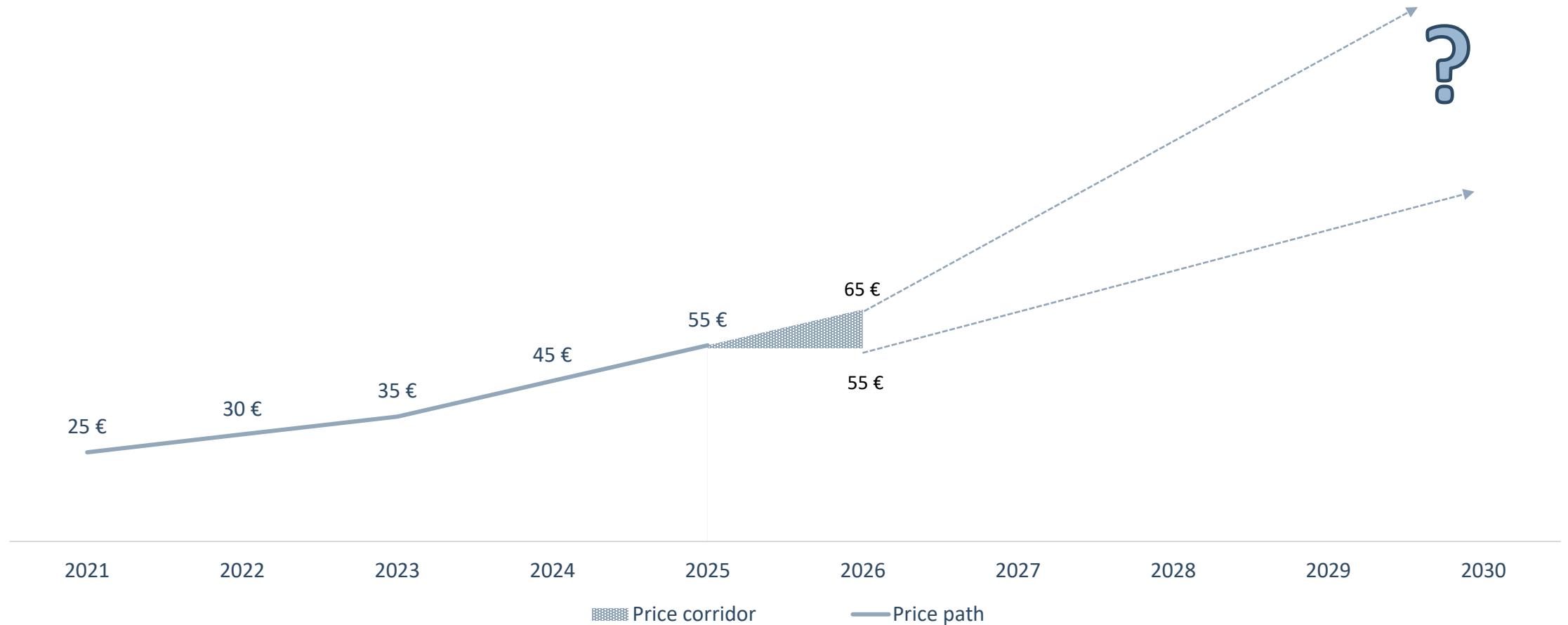


- › Market participants have no direct avoidance possibilities.
- › Fixed price, than price corridor
- › No banking possible (during pricing).

Source: Europäische Kommission

# Climate package: First price setting, then price corridor

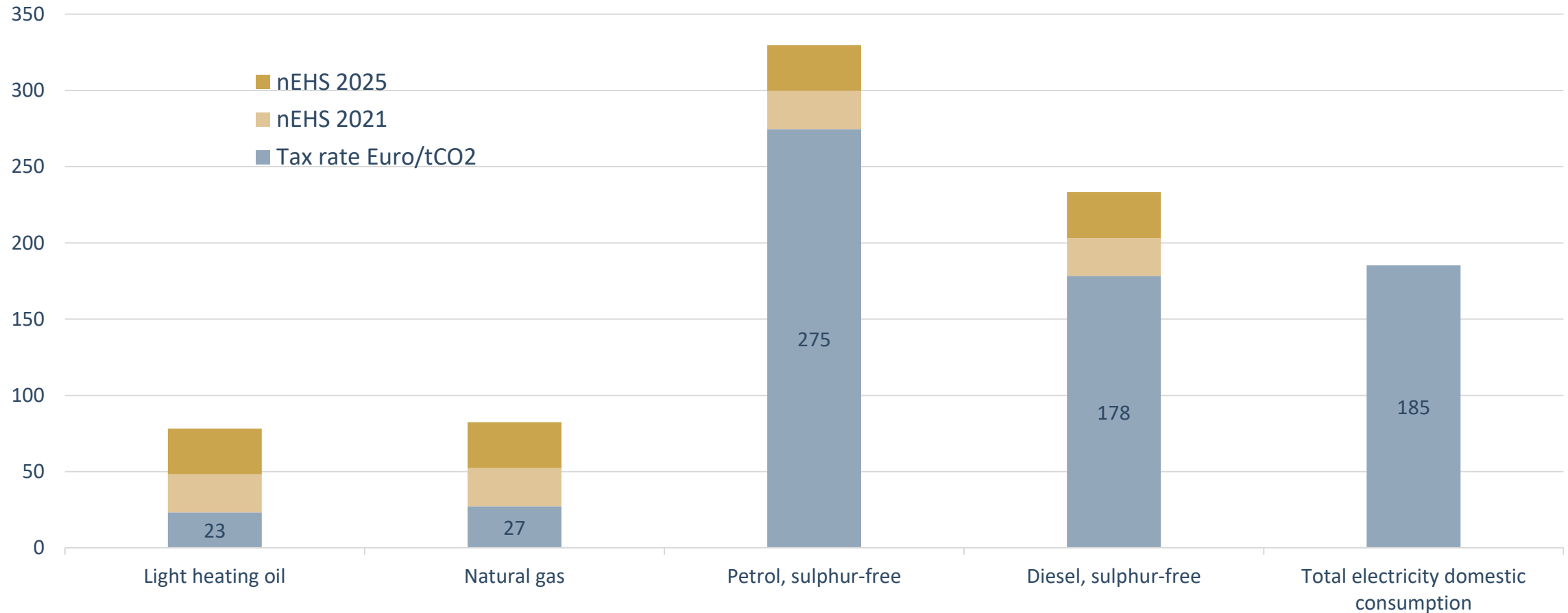
CO<sub>2</sub> prices for fuels and combustibles; price development after 2026 unclear



Source: Klimapaket der Bundesregierung

# Implicite CO<sub>2</sub> prices: Big differences

Energy tax, electricity tax, ETS-price, EEG surcharge converted into Euro / t CO<sub>2</sub>

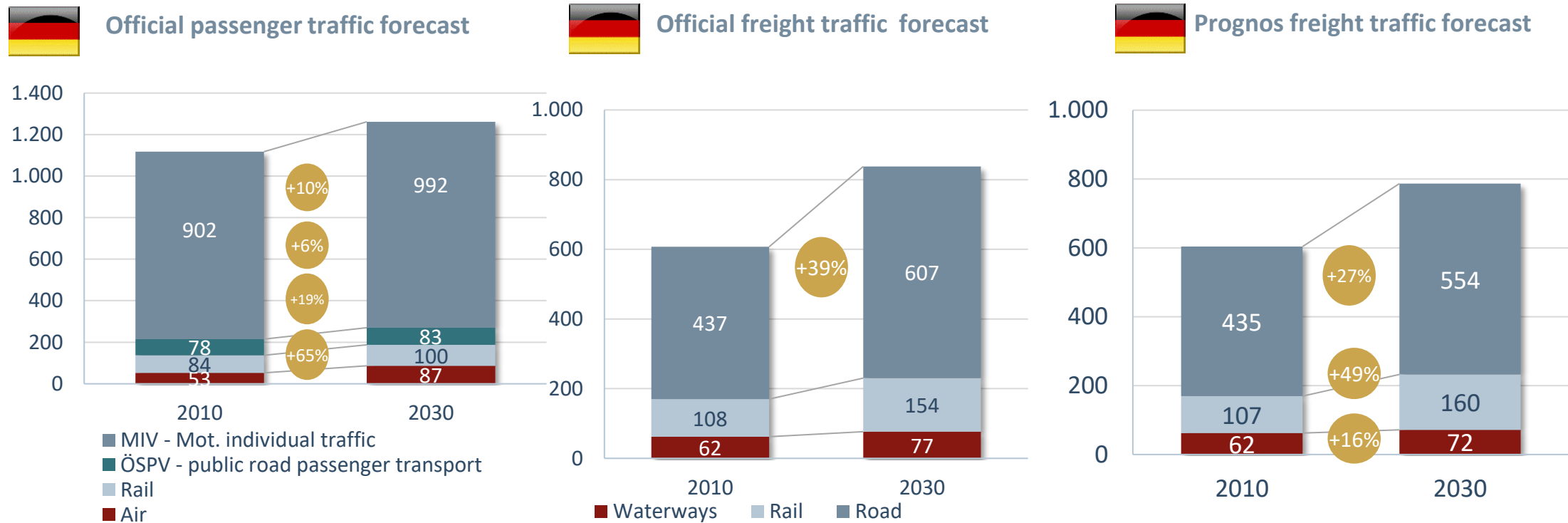


Sources: Bundeswirtschaftsministerium, Umweltbundesamt, Institut der deutschen Wirtschaft

# Traffic forecasts for Germany by the year 2030

Road traffic will continue to dominate

Traffic performance in billion passenger-kilometers/tonne-kilometers

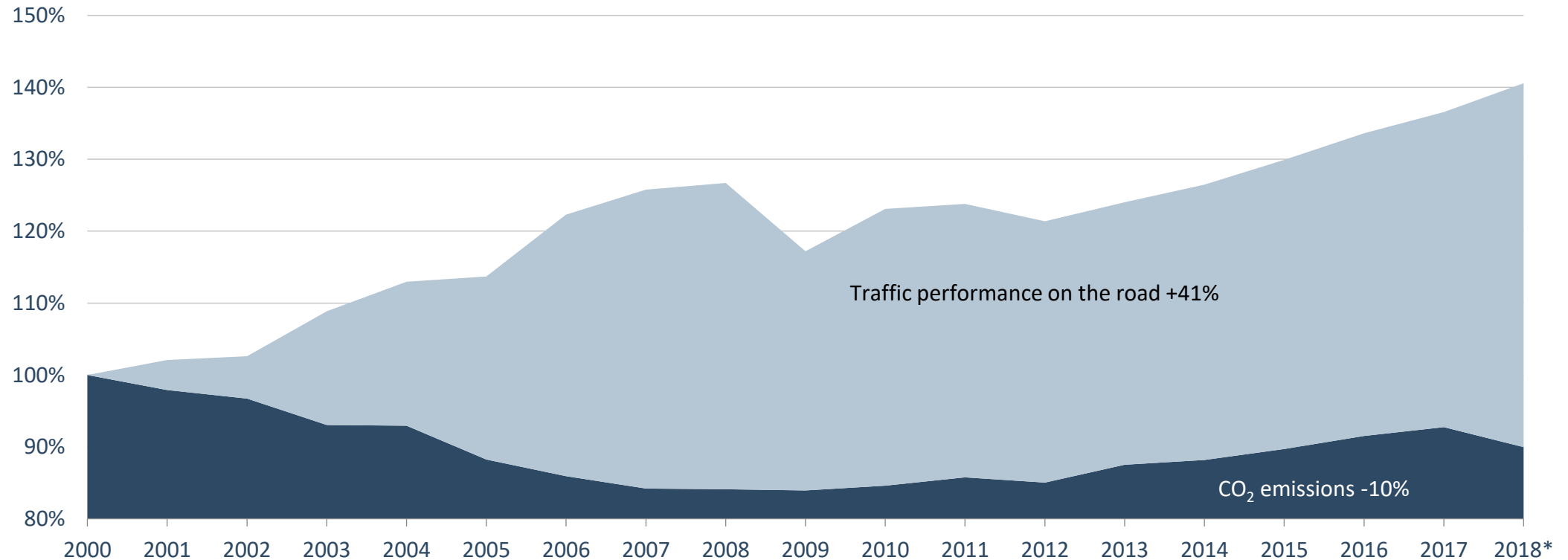


- ▶ There are indications that the 2013 forecast for the EU 27 is outdated. In the period from 2010 to 2015, it assumes growing transport services and clearly overestimates the real development.
- ▶ The Prognos Report does not cover the entire EU, but only 12 countries. These represent around 92 percent of road freight transport. Coverage is poorer at rail and waterways.

Sources: EU, Trends to 2050, 2013; Prograns, 2016; ; BMVI, Verflechtungsprognose 2030, 2014

# Traffic growth dominates the balance sheet

Development of traffic performance on the road and of CO<sub>2</sub> emissions of road transportation in Germany since 2000



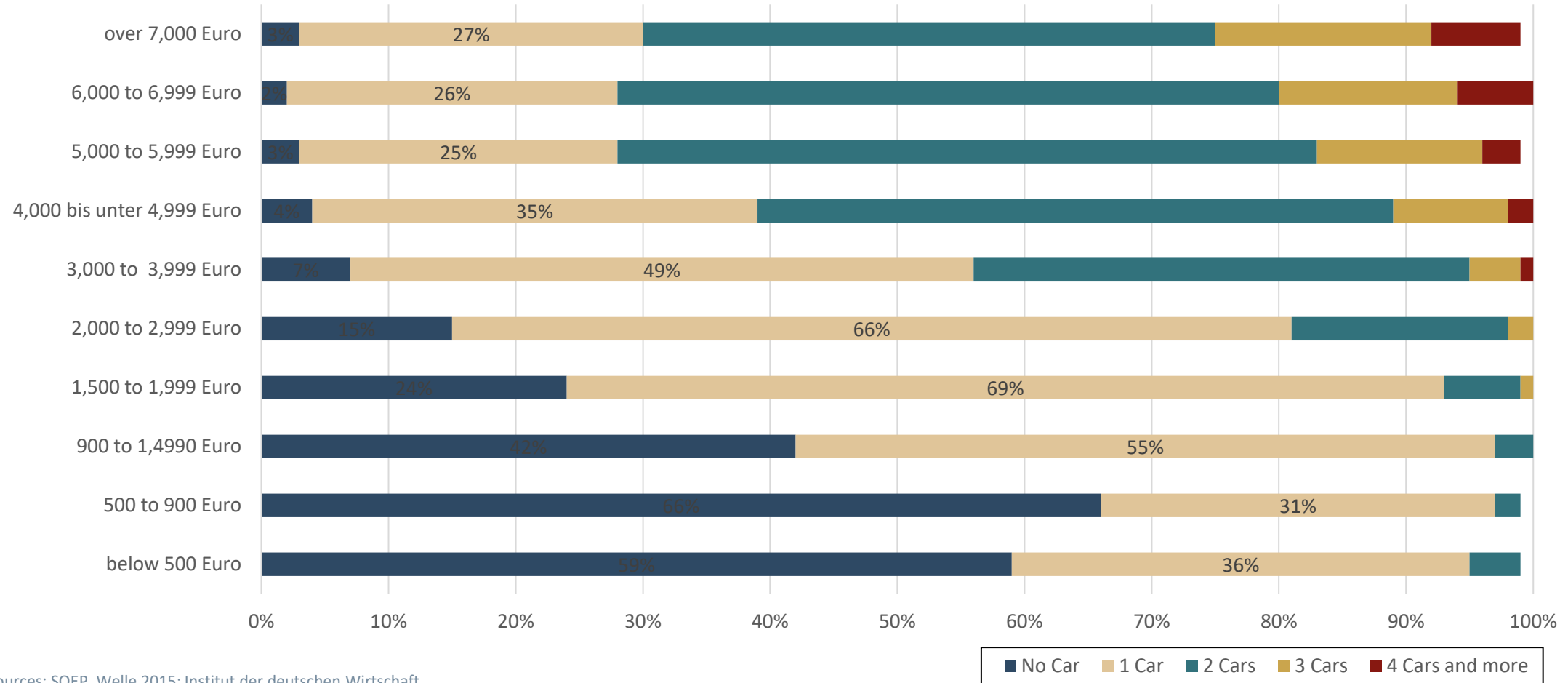
Calculation of traffic performance is analogous to the approach of Arbeitsgemeinschaft Energiebilanzen with the factor 1tkm = 10 pkm

Sources: Umweltbundesamt; Kraftfahrtbundesamt; own calculations



# Two thirds of a household have a maximum of one car

The number of cars per household grows with the income  
1st decile: 10 percent with the lowest income

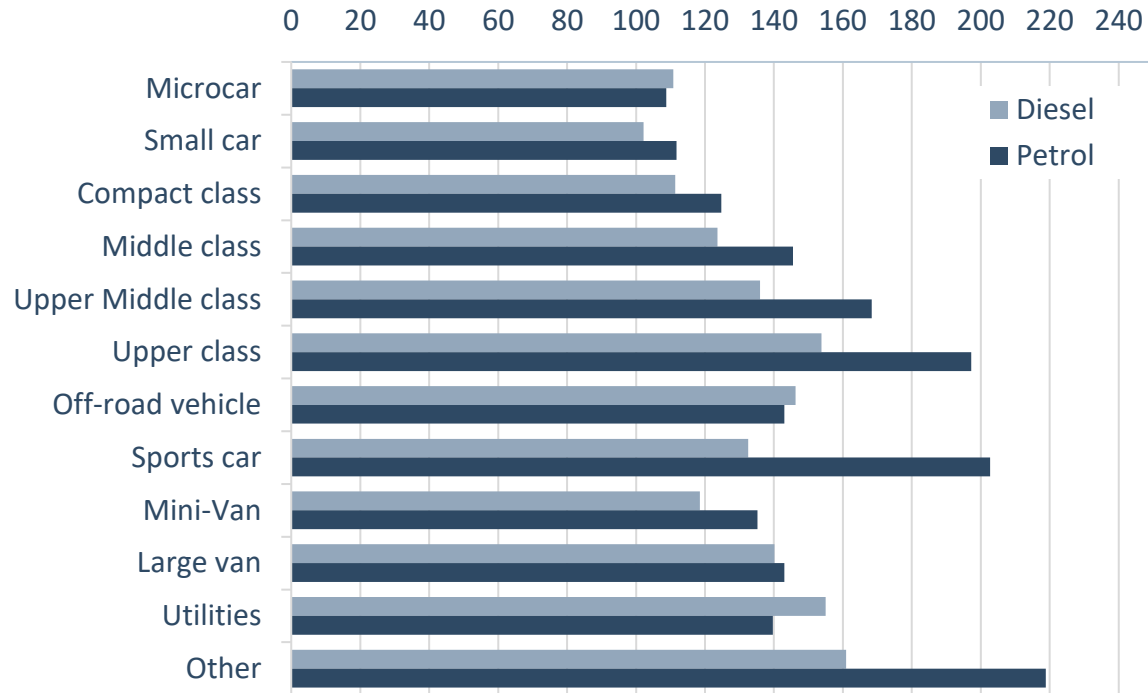


Sources: SOEP, Welle 2015; Institut der deutschen Wirtschaft  
Households are classified according to their net equivalent income and are divided into ten groups of equal size (deciles).  
The 1st decile represents the 10 percent of households with the lowest income; the 10th decile the 10 percent with the highest income.

# Where would Germany be without Diesel?

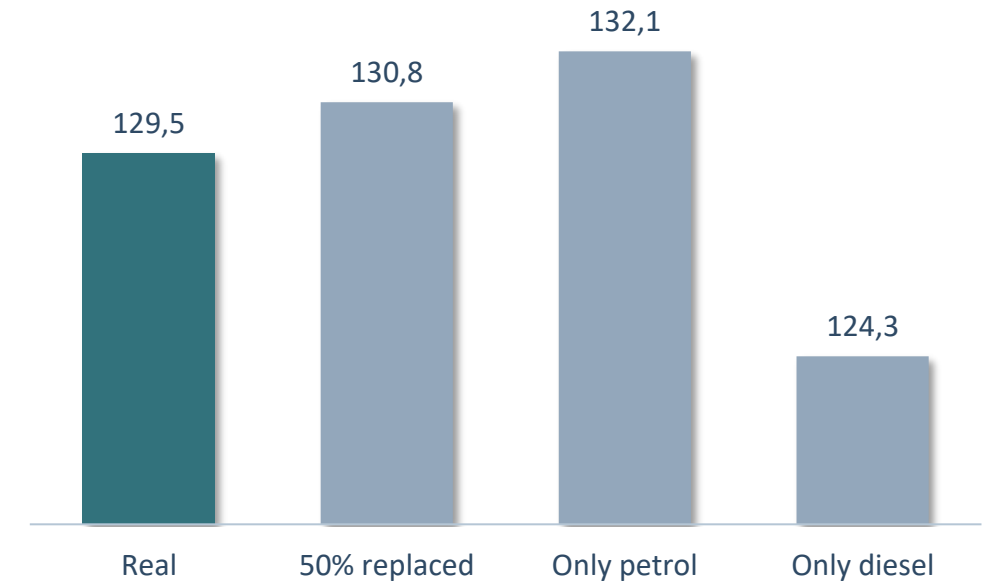
## CO<sub>2</sub> emissions of the new registrations of 2018

By segment and drive in g per km



## What would emissions be if some of the diesel were replaced by gasoline engines?

CO<sub>2</sub> emissions in g per km

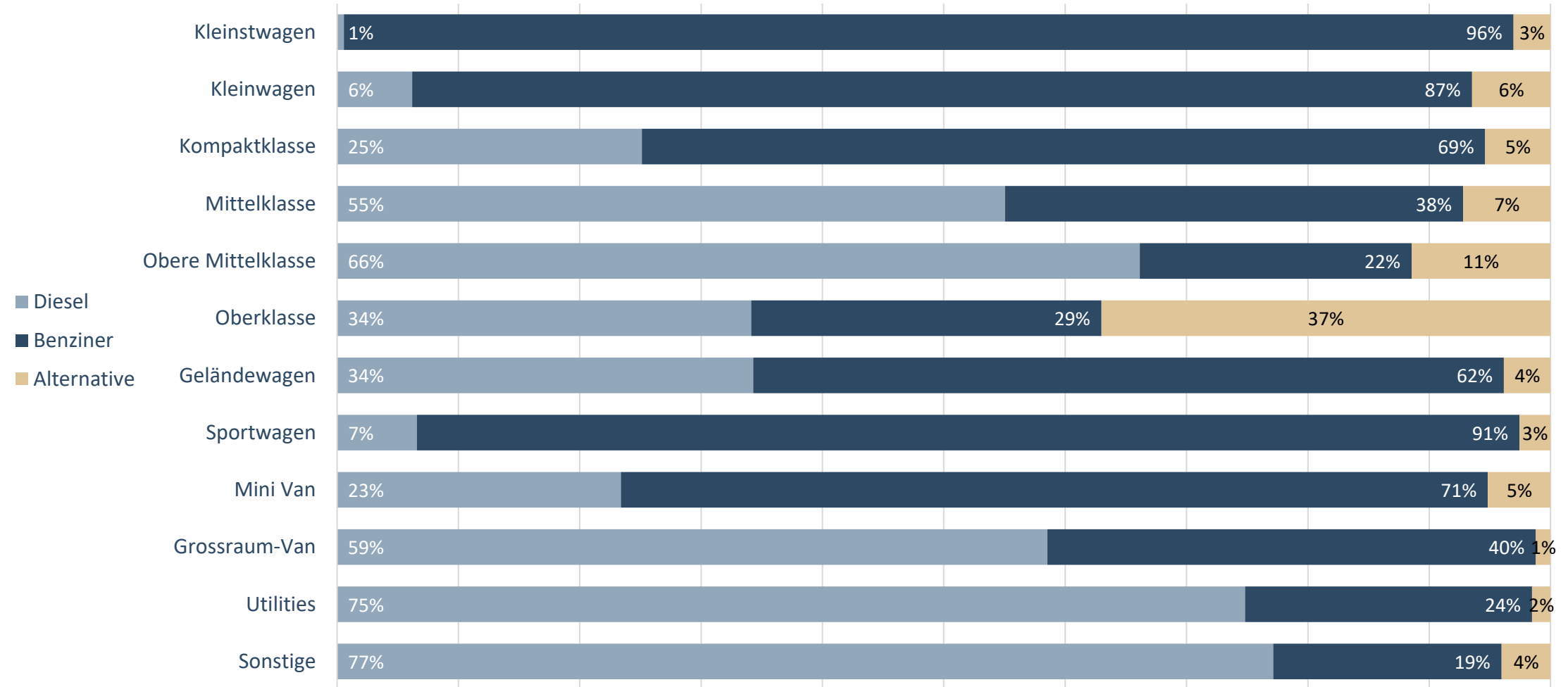


- ▶ In all vehicle classes, diesel emissions are lower than those of gasoline engines.
- ▶ Diesel dominates the large vehicle classes.
- ▶ Without the use of diesel engines, the emissions of new cars would be significantly higher.

Source: Own calculations

# Alternative drives are increasing in large vehicles

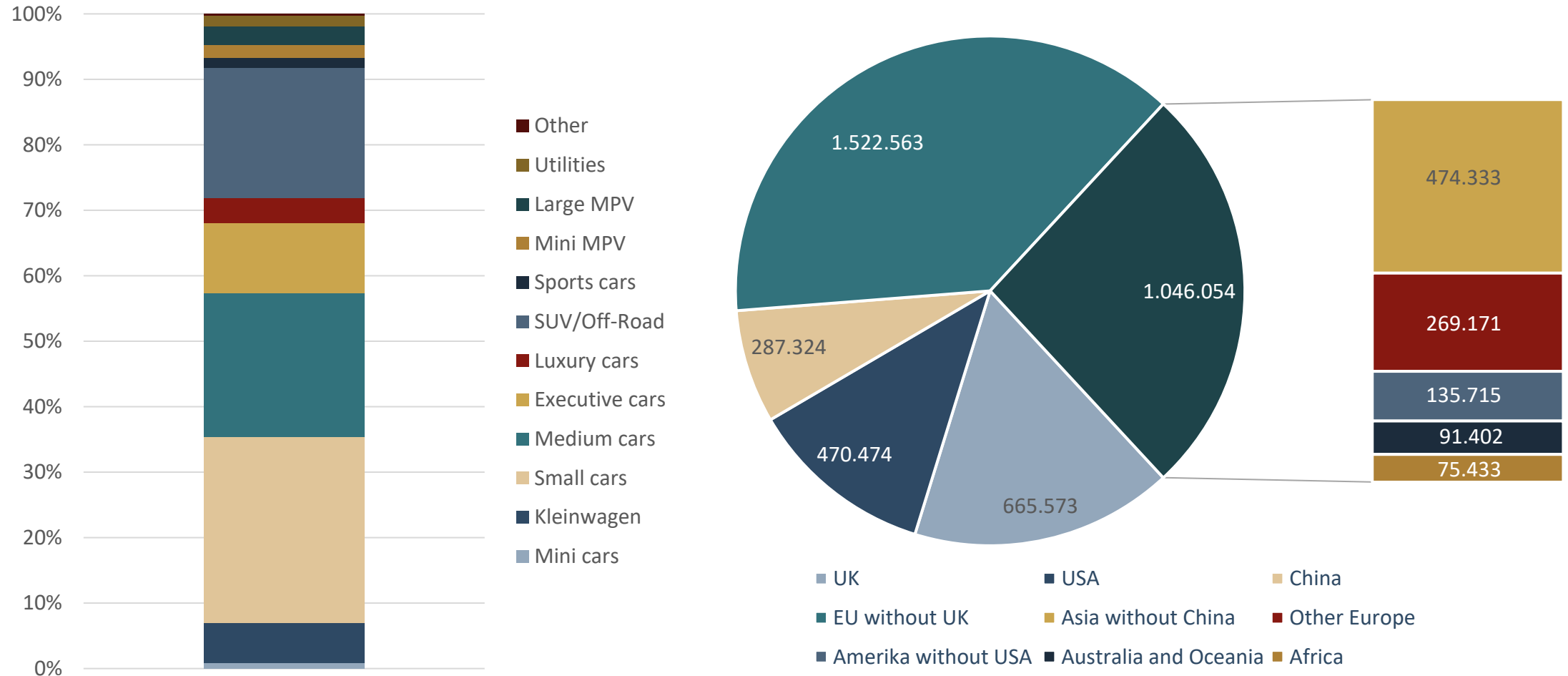
New registrations in Germany – market shares by segment and drives in percent



Source: KBA 2020

# Car production and export in Germany

Production by segment and export to destination countries in 2019

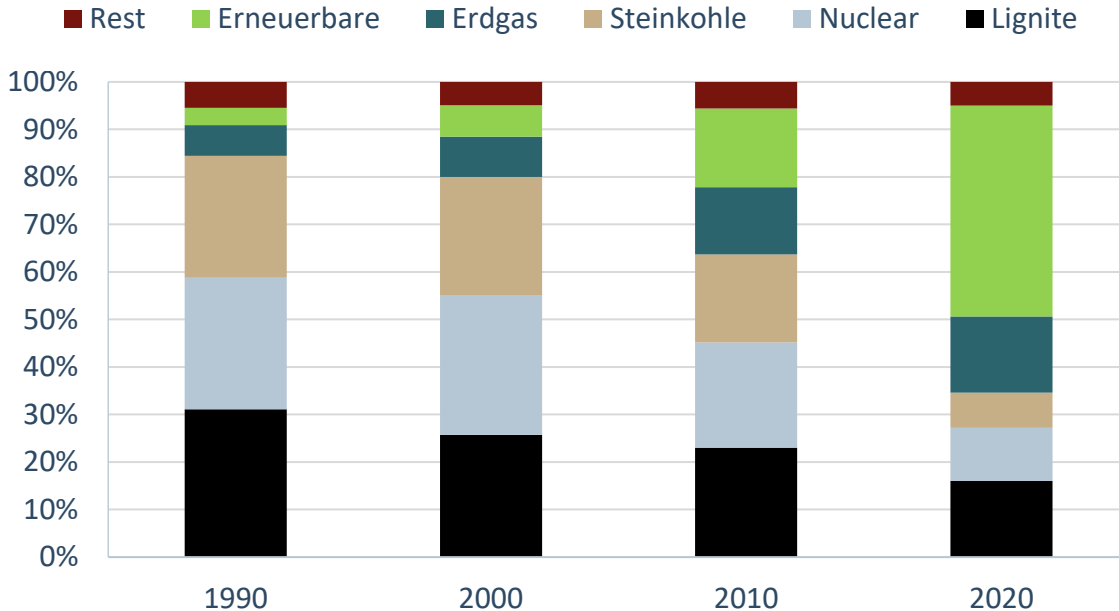


Source: VDA, 2020

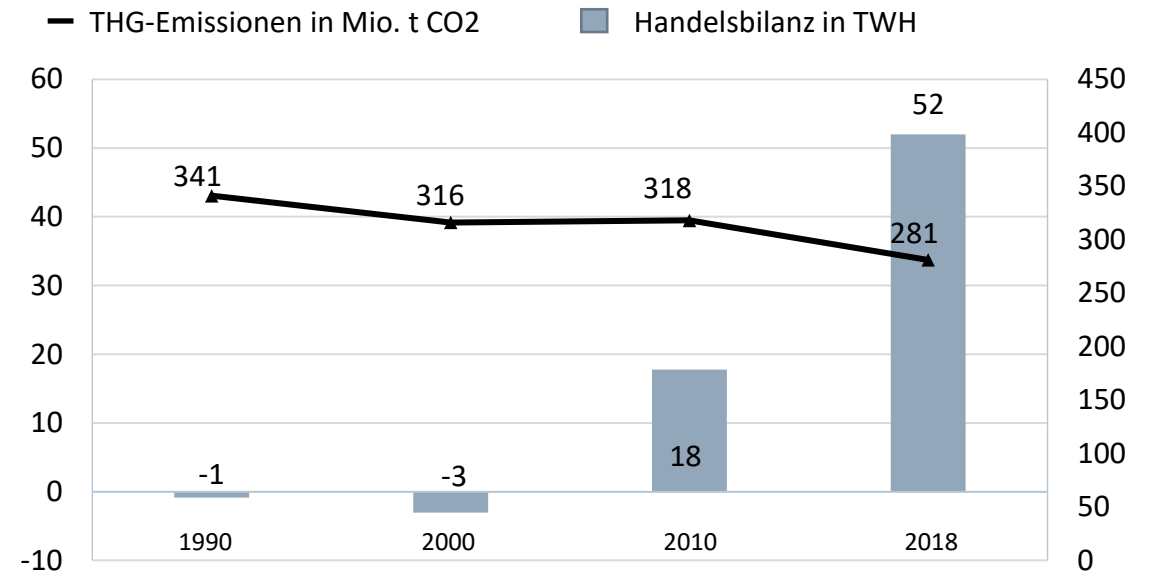
# German energy transition: unexpected consequences

The subsidization of renewable energies led to a growing export of electricity

## Electricity mix



## Power Generation and Trading Germany



- ▶ Electricity generation: Despite the growing share of renewables, CO<sub>2</sub>- emissions are increasing.
- ▶ Reason: Renewables are displacing natural gas and hard coal power plants in particular, and the use of nuclear energy is being reduced. Lignite closes the resulting base load gap.
- ▶ Subsidization of renewable energies has made the supply more volatile. More and more often there is a surplus of electricity, which must be exported abroad cheaply.

Sources: Arbeitsgemeinschaft Energiebilanzen 2020, EEA 2020 (v23)