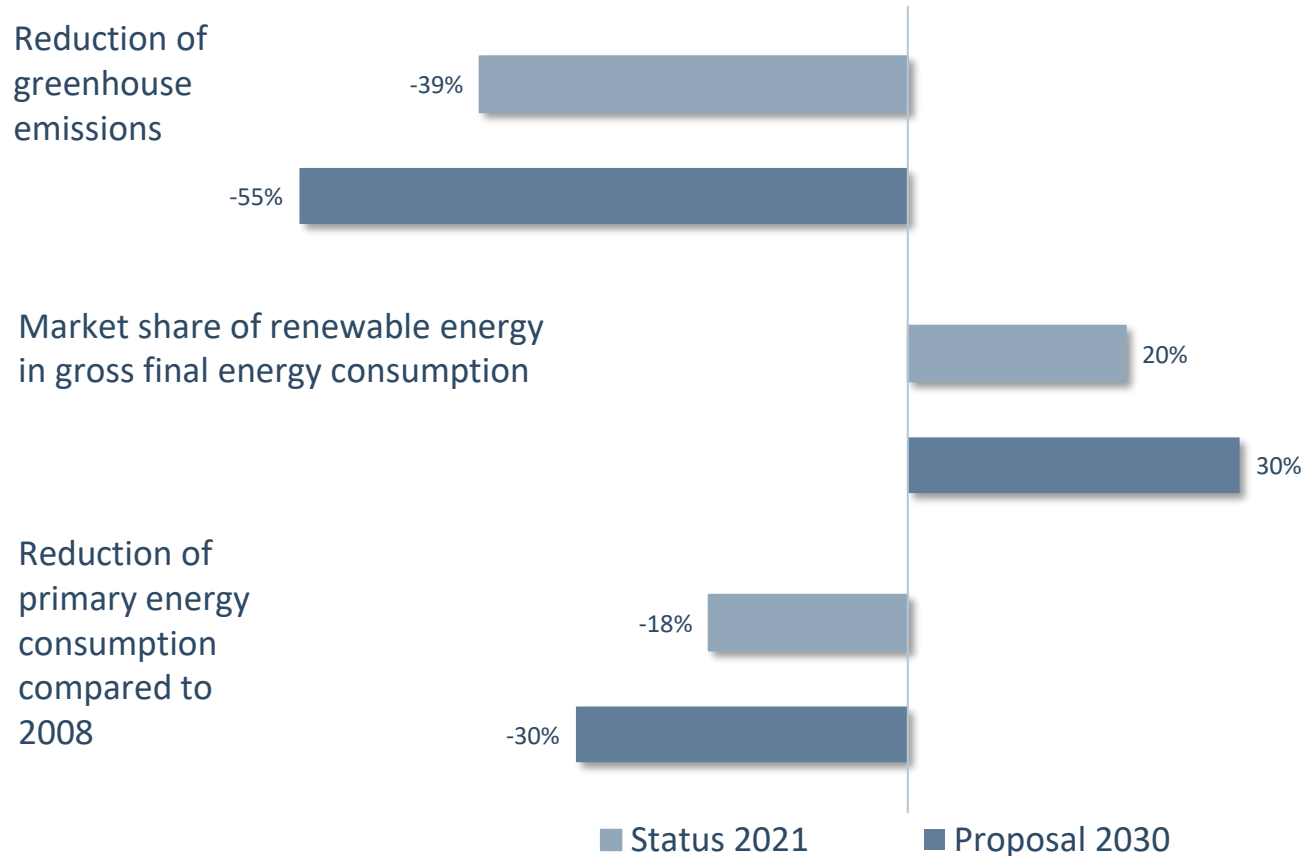


Kompendium 5.2 Section Germany



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

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

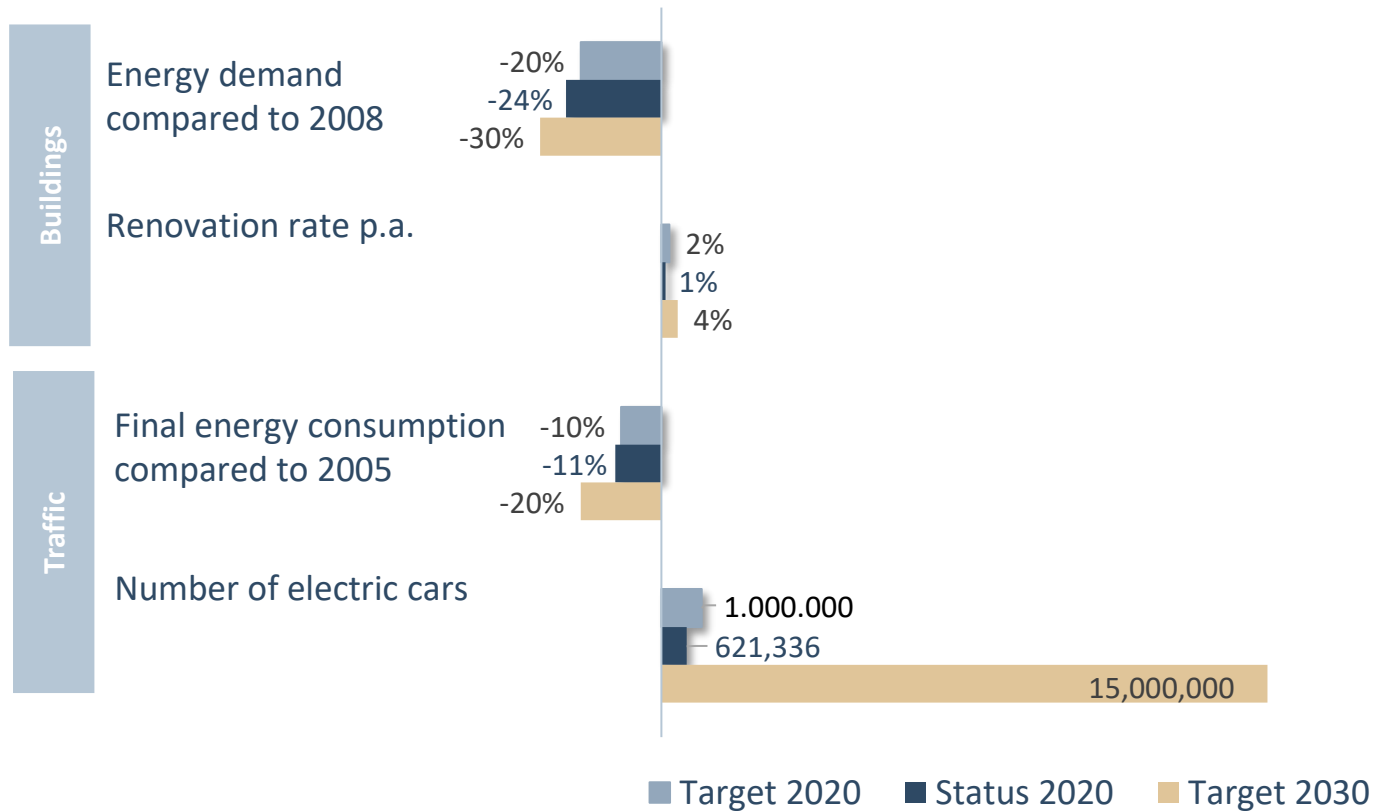


- ▶ The greenhouse gas emissions of Germany rose by 4.5 Percent in 2021.
- ▶ The sector targets in the transport and buildings sectors were exceeded .
- ▶ The required pace of change will be drastically increased for the period after 2020.

Sources: BMWi, UBA, AGEB

Buildings and transport

Reduction targets of the federal government in percent

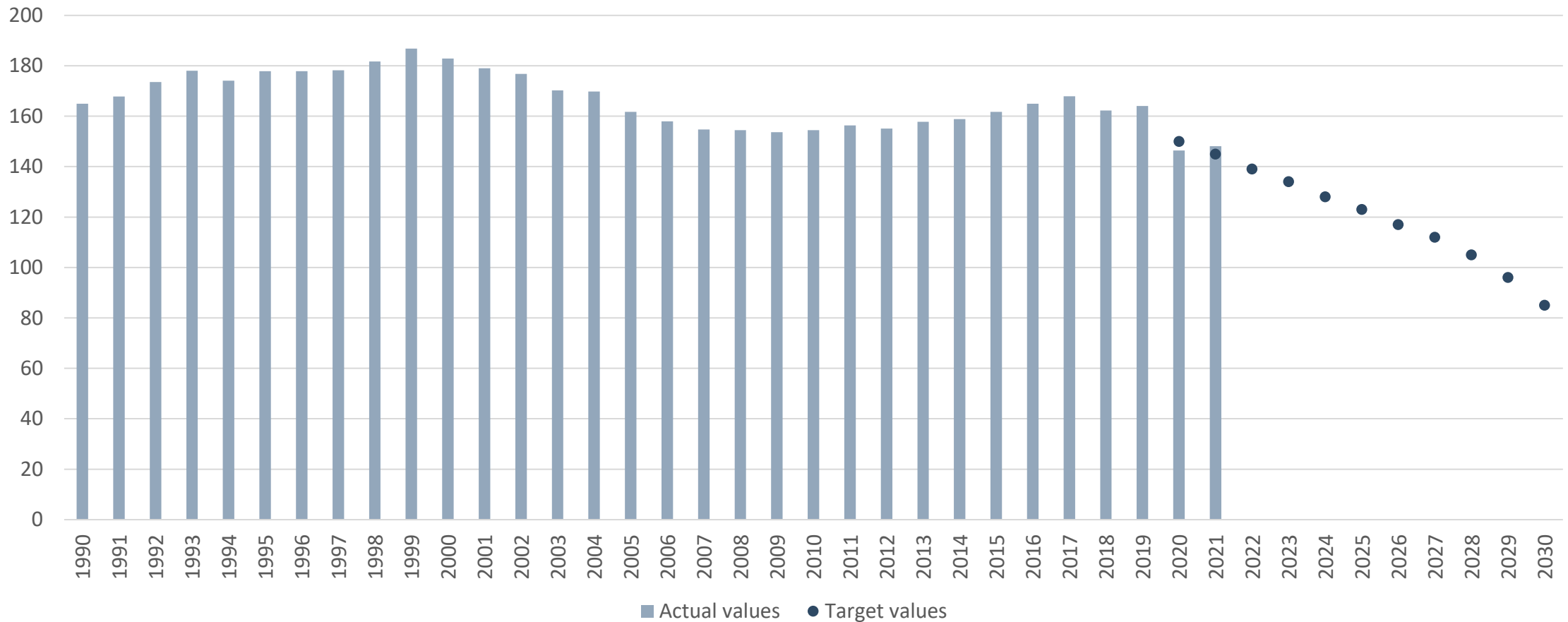


- ▶ The federal government's target value for road traffic is at 136 - 141 Mio. t CO₂; As of 2018: 157 Mio. t CO₂.
- ▶ The building sector is very likely to miss its target.
- ▶ On January 1st, 2020, 136.617 pure electric cars and 102.175 plug-in-hybrids were registered in Germany.

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

Ambitious plans

CO₂-Emissionen of the german transport in million tons

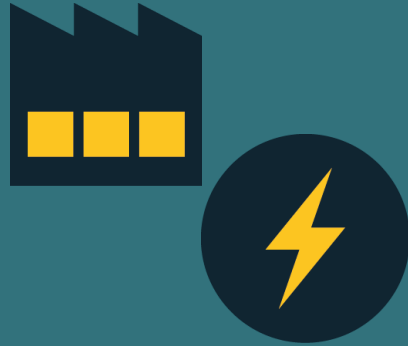


Quelle: Umweltbundesamt, 2022

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

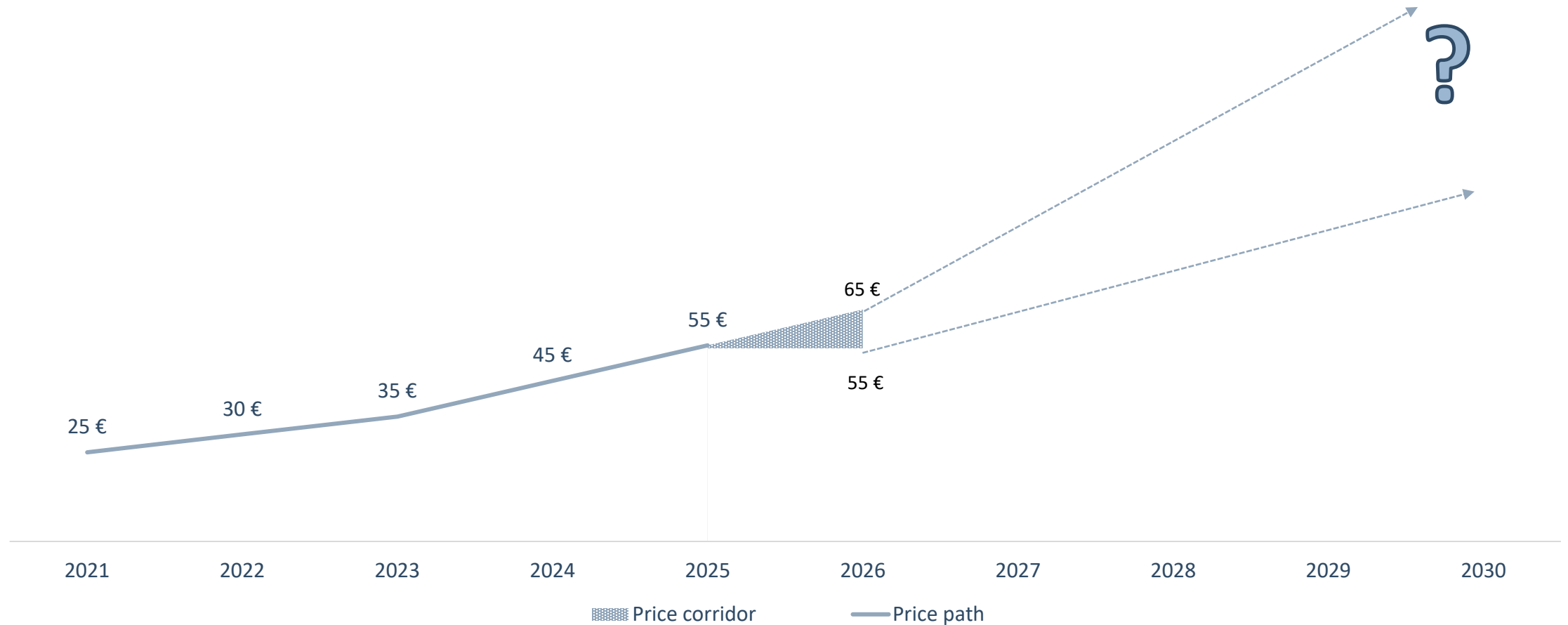


- › Market participants have no direct avoidance possibilities.
- › Fixed price, than price corridor
- › No banking possible (during pricing).

Source: Europäische Kommission

Climate package: First price setting, then price corridor

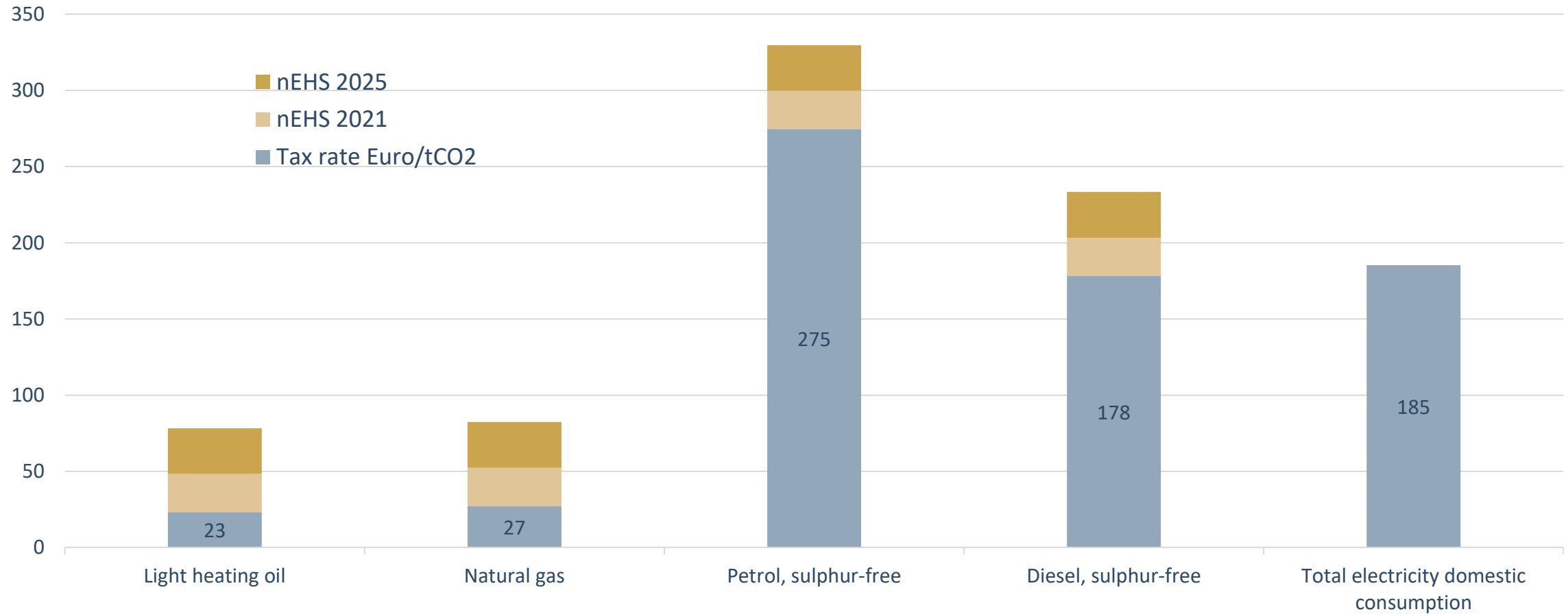
CO₂ prices for fuels and combustibles; price development after 2026 unclear



Source: Klimapaket der Bundesregierung

Implicit CO₂ prices: Big differences

Energy tax, electricity tax, ETS-price, EEG surcharge converted into Euro / t CO₂

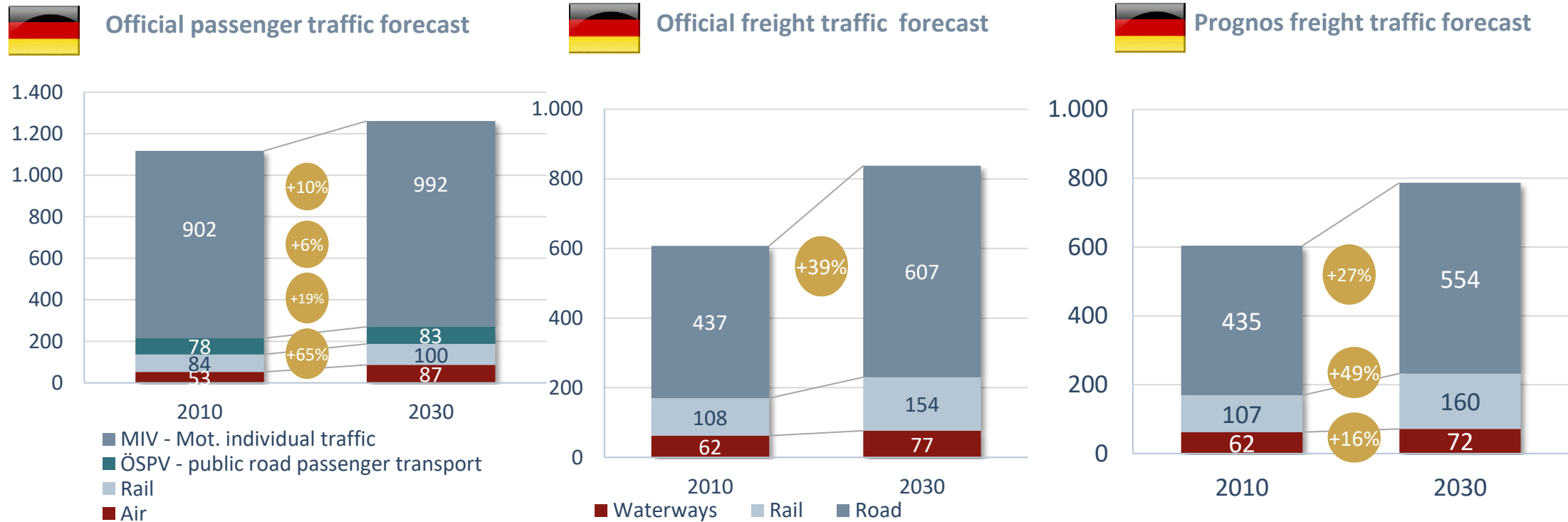


Sources: Bundeswirtschaftsministerium, Umweltbundesamt, Institut der deutschen Wirtschaft

Traffic forecasts for Germany by the year 2030

Road traffic will continue to dominate

Traffic performance in billion passenger-kilometers/tonne-kilometers

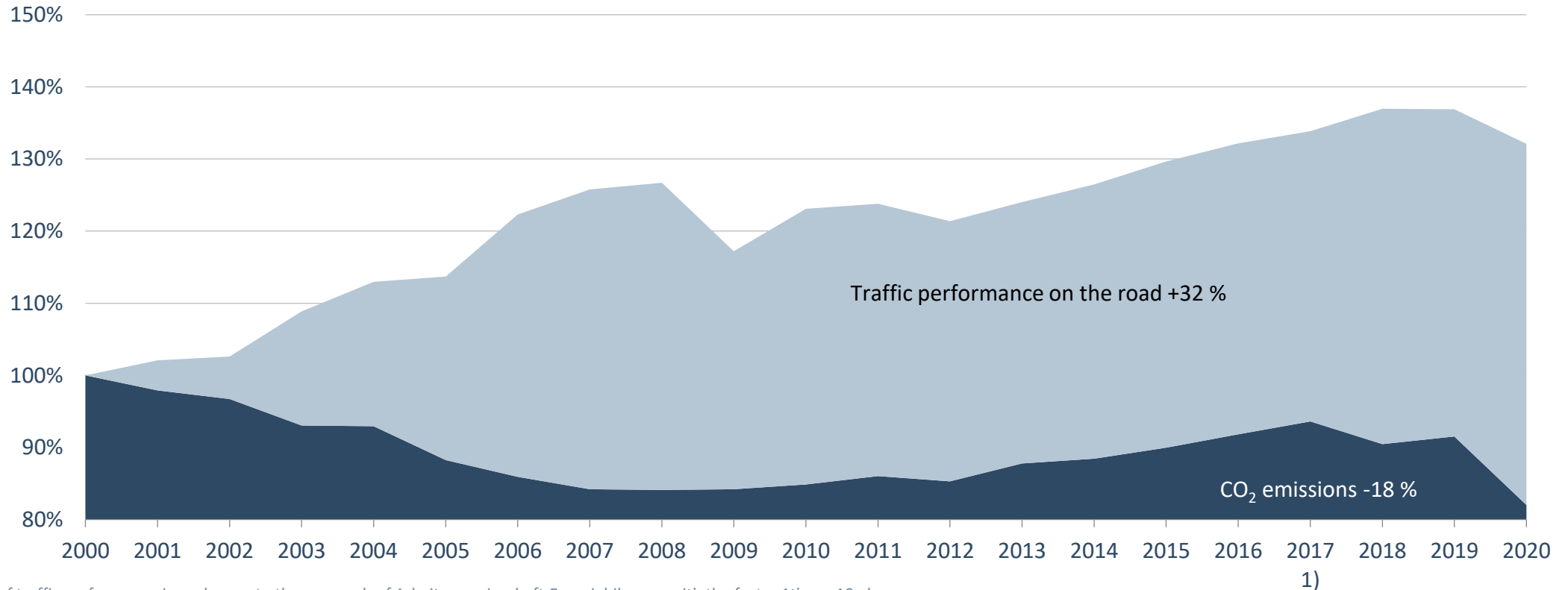


- ▶ There are indications that the 2013 forecast for the EU 27 is outdated. In the period from 2010 to 2015, it assumes growing transport services and clearly overestimates the real development.
- ▶ The Prognos Report does not cover the entire EU, but only 12 countries. These represent around 92 percent 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 CO₂ emissions of road transportation in Germany since 2000

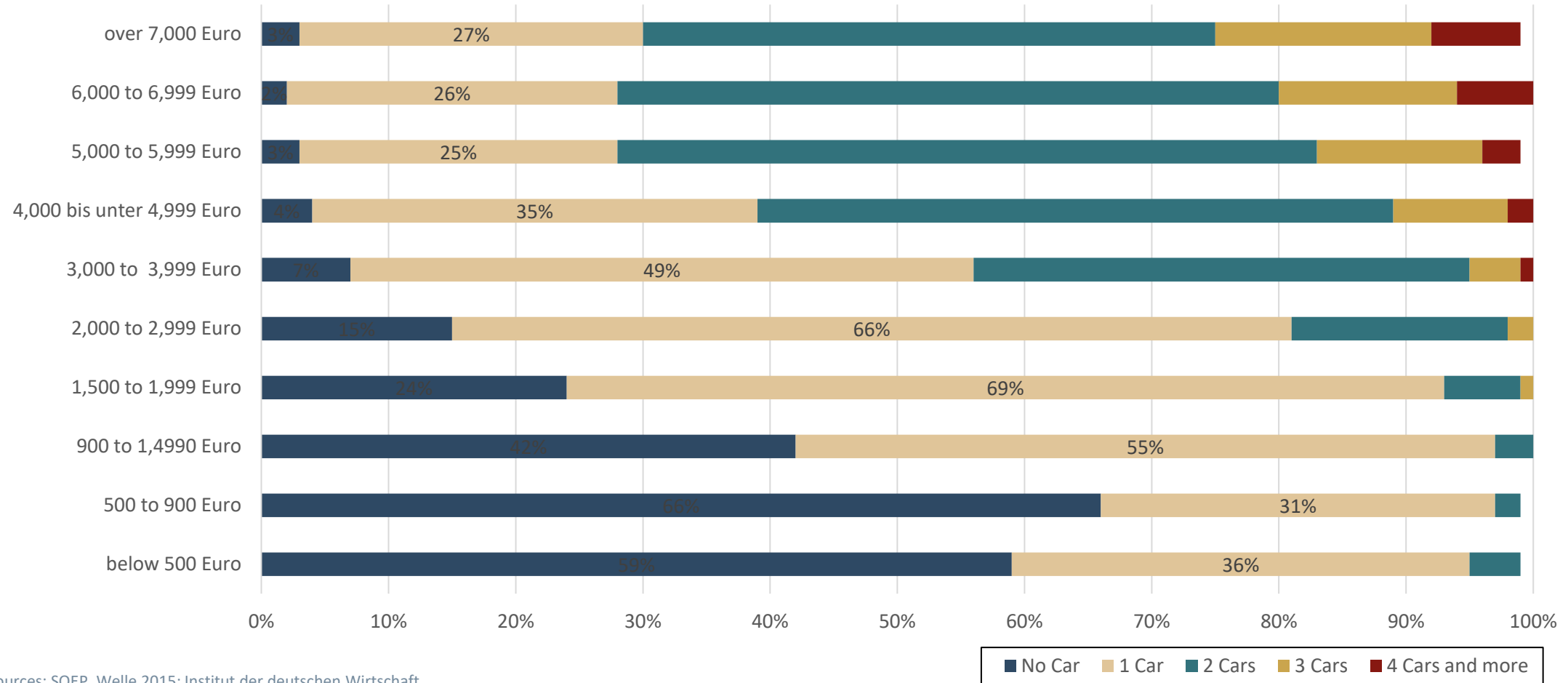


Calculation of traffic performance is analogous to the approach of Arbeitsgemeinschaft Energiebilanzen with the factor 1tkm = 10 pkm;
1) New calculation method to derive the transport performance of passenger cars led to a decline of 50 billion pkm

Sources: EEA, 2022 (v25); BMVI, 2022; own calculations

Two thirds of a household have a maximum of one car

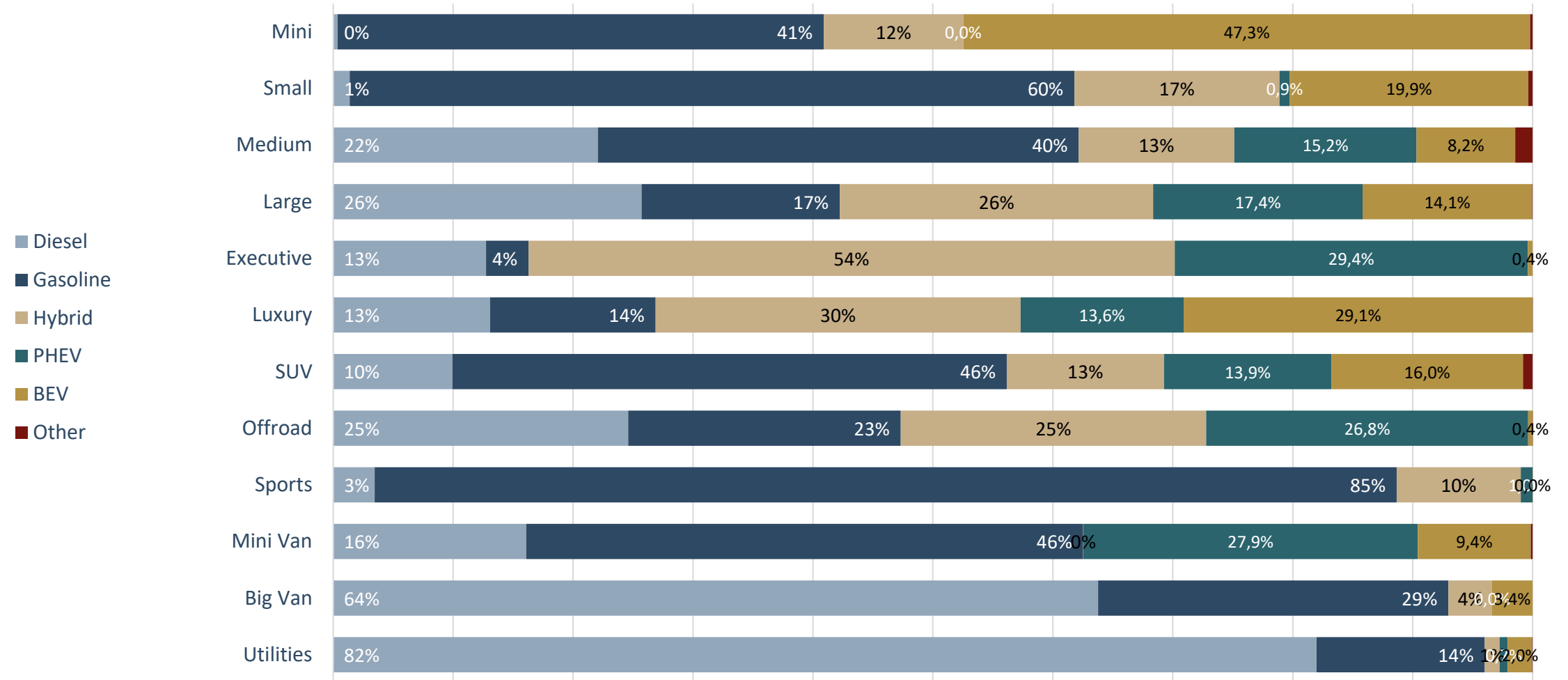
The number of cars per household grows with the income
1st decile: 10 percent with the lowest income



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.

Alternative drives are increasing in large vehicles

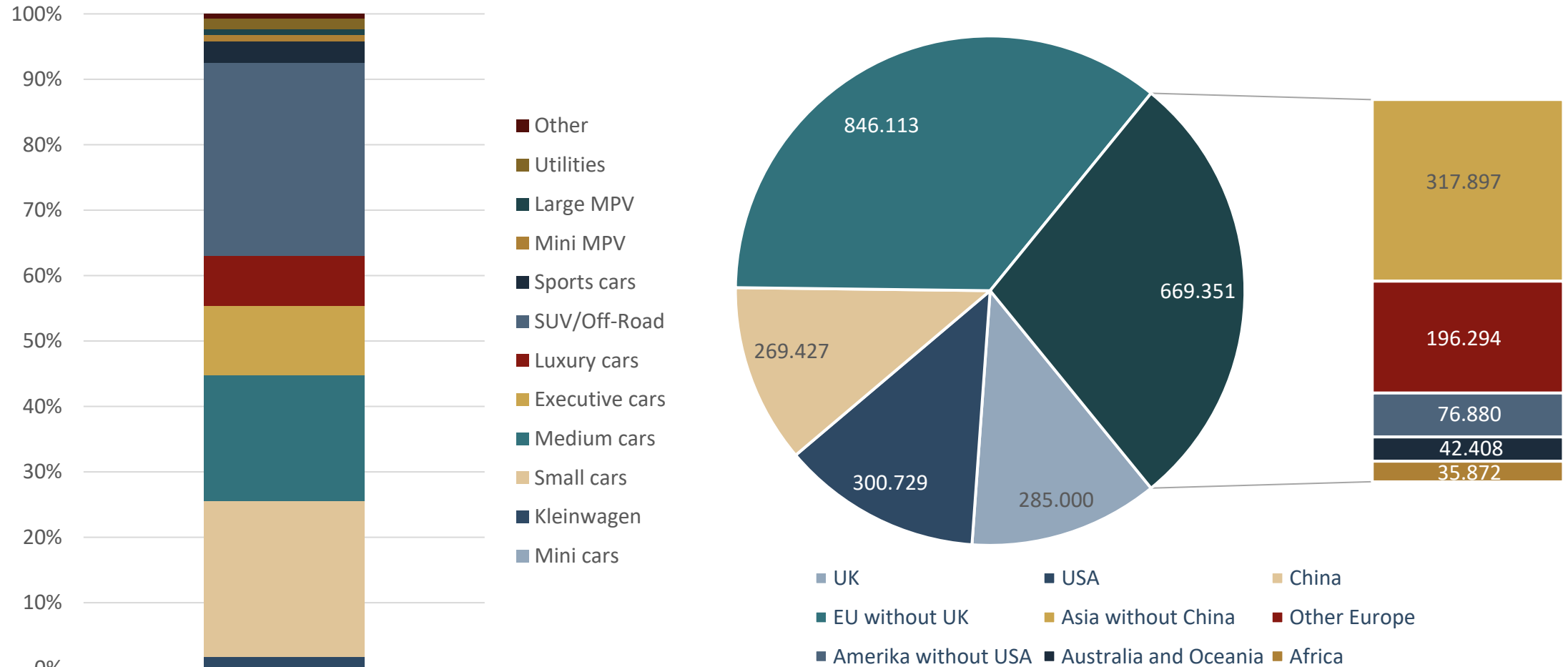
New registrations in Germany – market shares by segment and drives in percent



Source: KBA 2022

Car production and export in Germany

Production by segment and export to destination countries in 2022

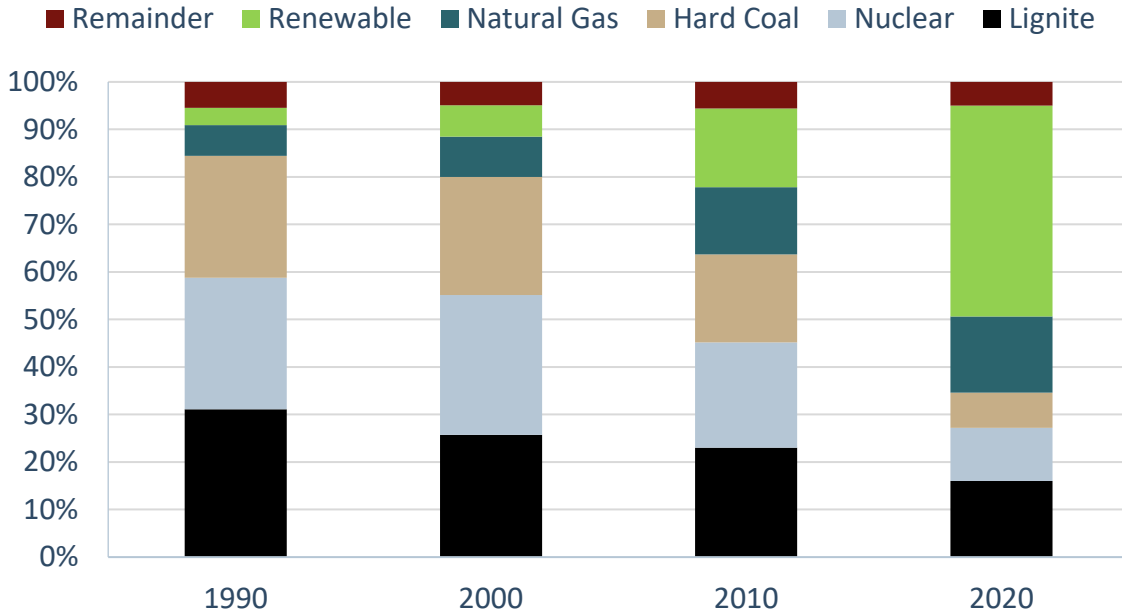


Source: VDA, 2022

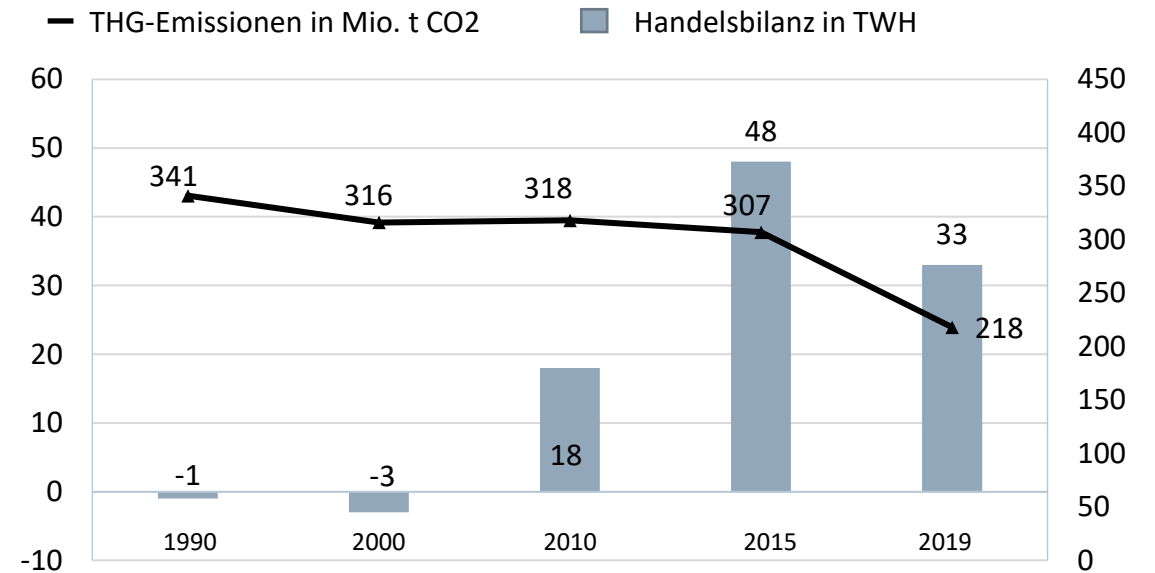
German energy transition: unexpected consequences

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, CO₂- 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 2021, EEA 2021 (v24)