



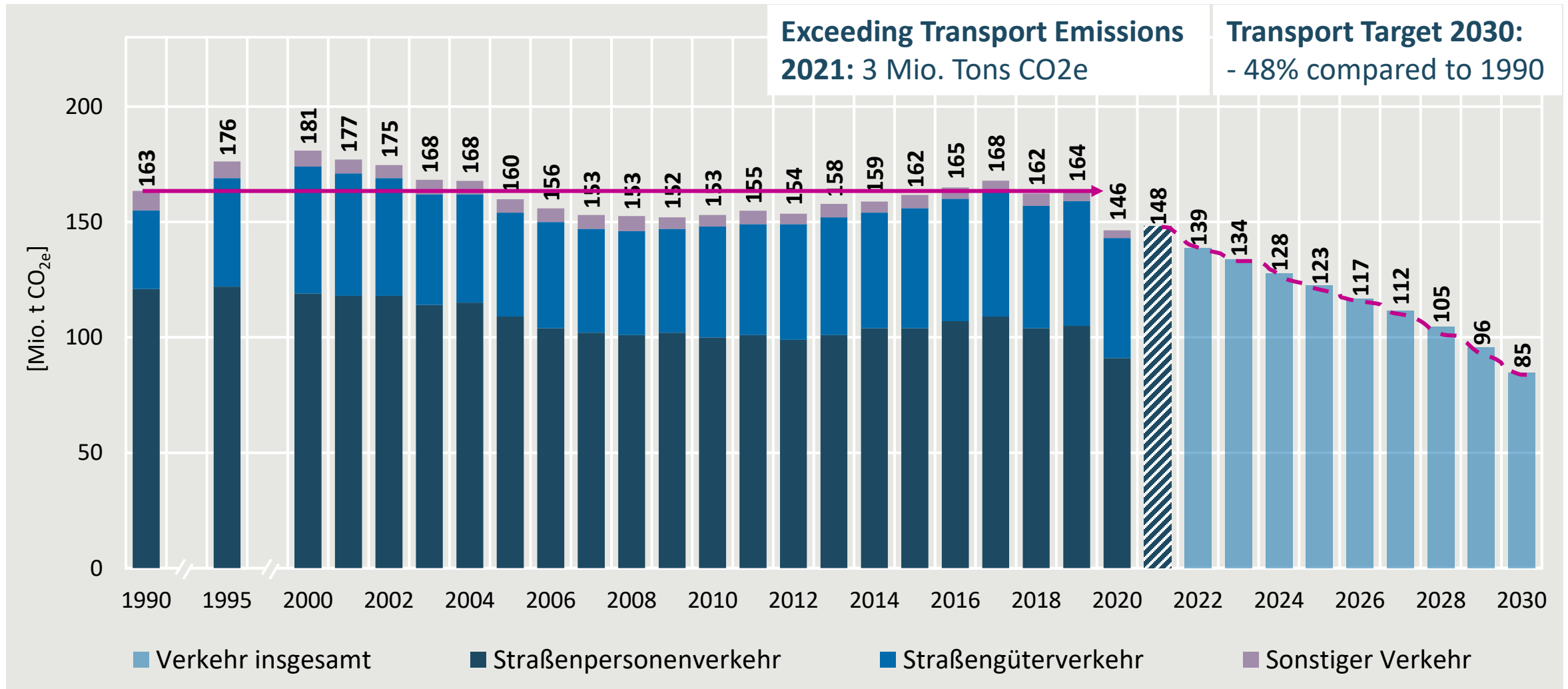
## **Germany's E-mobility regulatory landscape**

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11/09/2023

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# Where are we today and what's to do: Cutting CO<sub>2</sub> emissions in half until 2030



# The ‚Verkehrswende 2050‘ will be enabled by the Mobility Transition and the Energy Transition in Transport.

## VERKEHRSWENDE

The **Verkehrswende** enables the German transport sector to be carbon neutral by 2050.



## MOBILITÄTSWENDE

The **Mobility Transition** reduces the energy consumption of the German transport sector based on Avoid, Shift and Improve.

+

## ENERGIEWENDE IM VERKEHR

The **Energy Transition in Transport** covers the remaining energy demand of the German transport sector with renewable energy.

# What are the Characteristics of Transport in 2030 on the Way to Climate Neutrality in 2045?

## ENERGY TRANSITION

- Nearly every **3<sup>rd</sup>** LDV on the road is electric;
- Nearly every **3<sup>rd</sup>** LCV on the road is electric;
- **1/3** of the **Road Freight Volume** will be driven electric;

## MOBILITY TRANSITION

- **x2**: The Ridership in **Trains** double;
- **x2**: The Ridership in **Public Urban Transport** sare going to double until 2035;
- **1/4** of the Perosnal Transport Volume will be done by **Cycling** or **Walking**;
- Every **4<sup>th</sup>** Ton of Freight Volume will be transported on **Rail**.

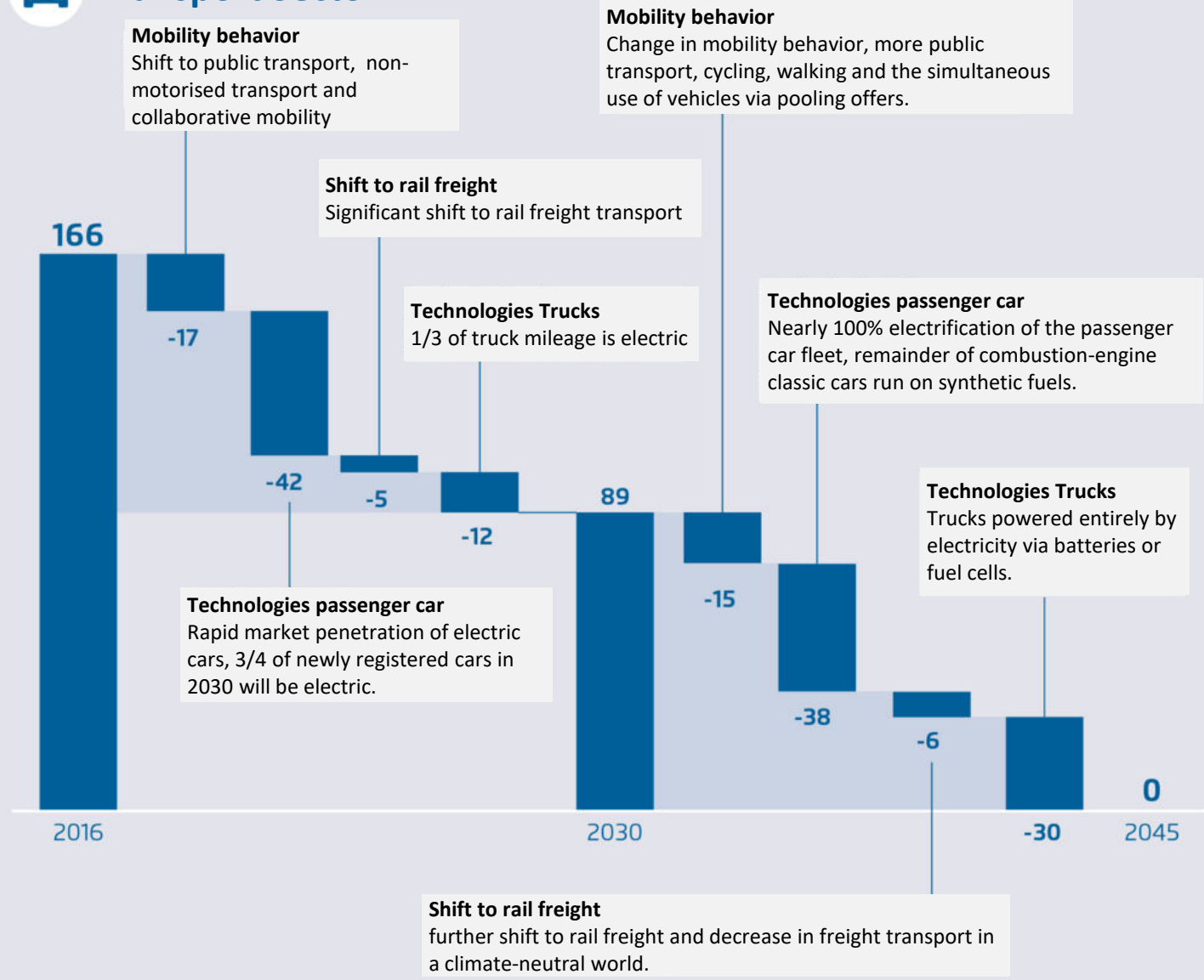
# A Climate-Neutral German Transport Sector by 2045

## GHG reduction steps till 2030 and 2045

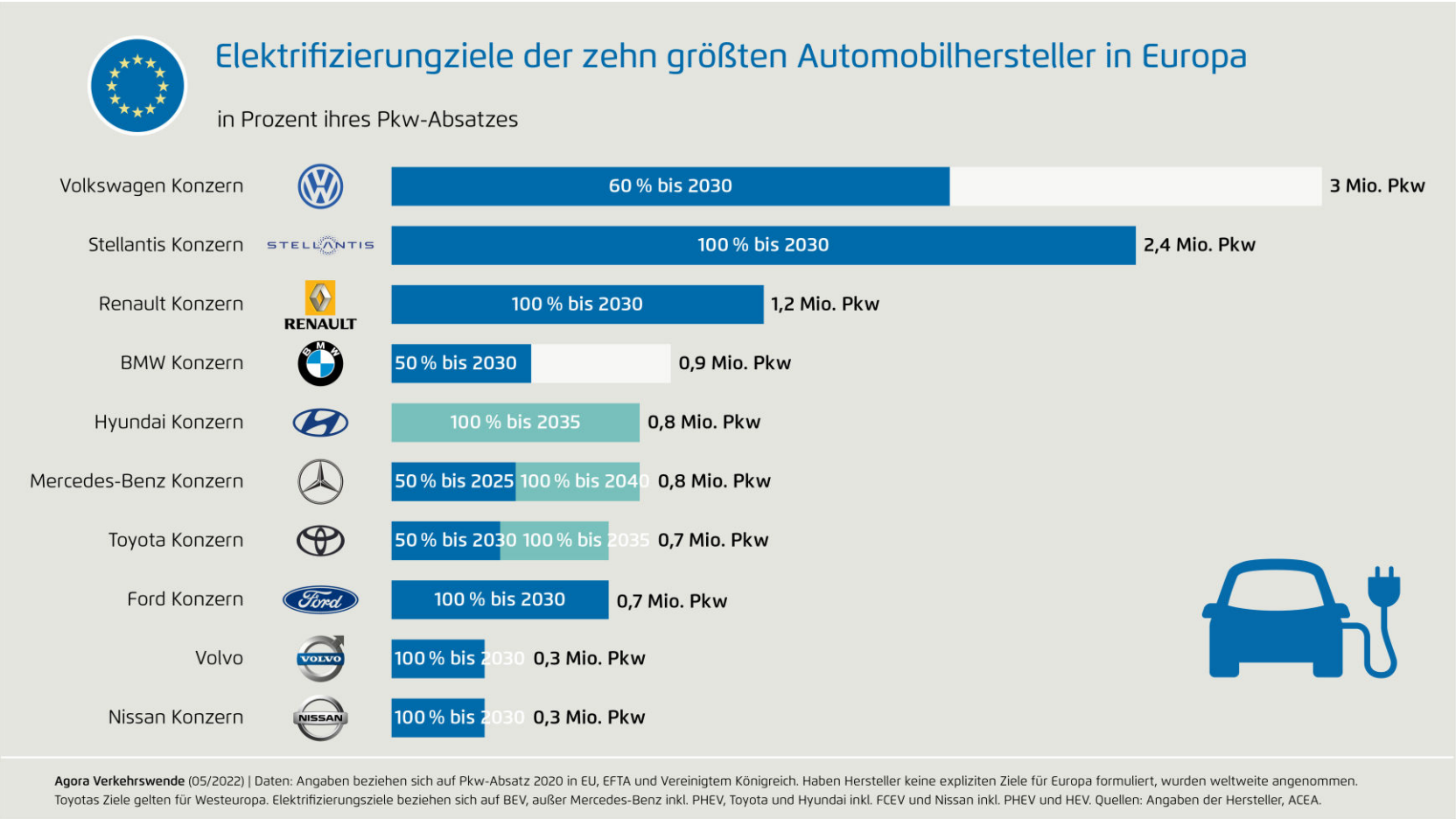
Electrification of passenger car transport is the most important single measure.



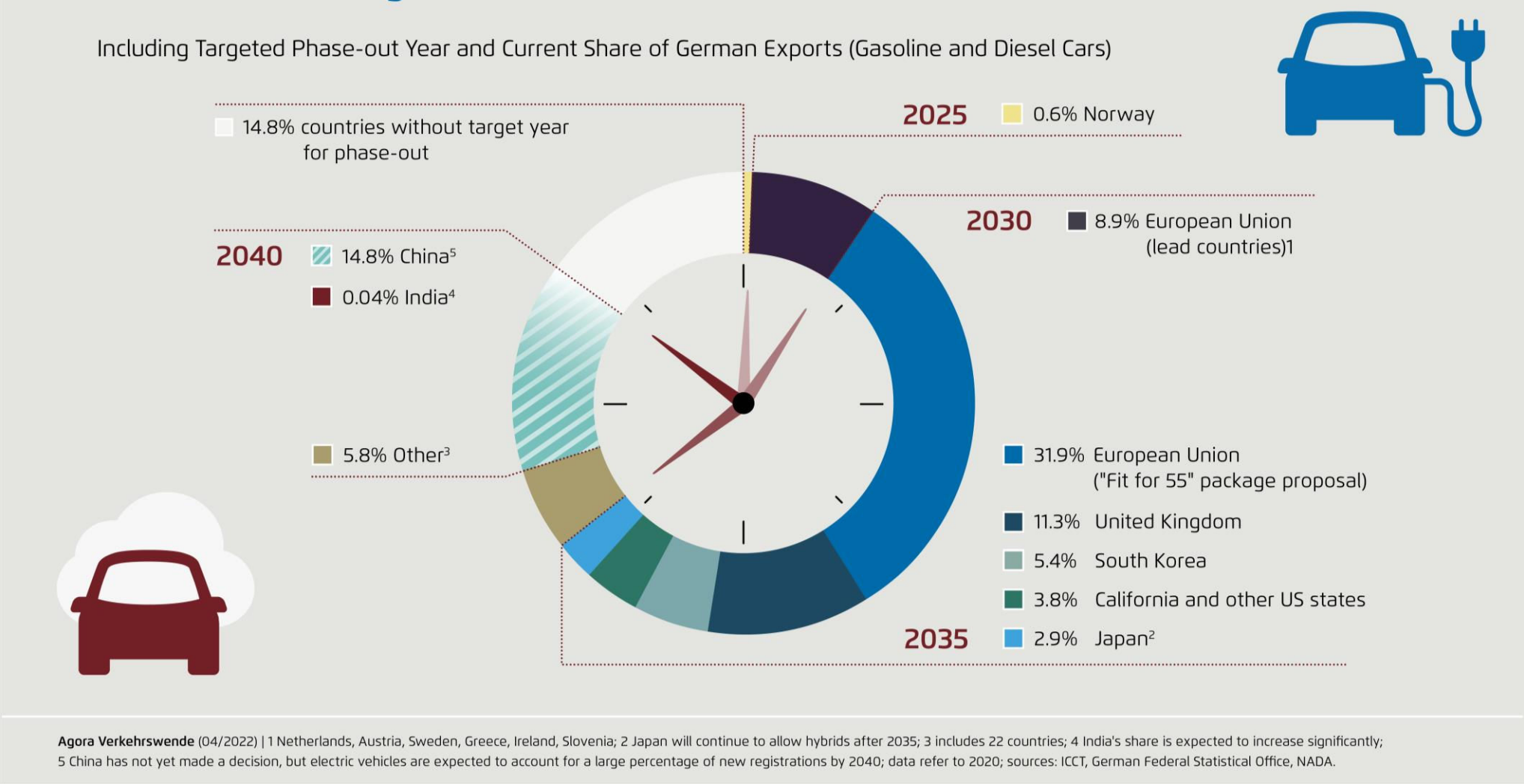
### Transport Sector



# Electrification targets of the top ten EU carmakers

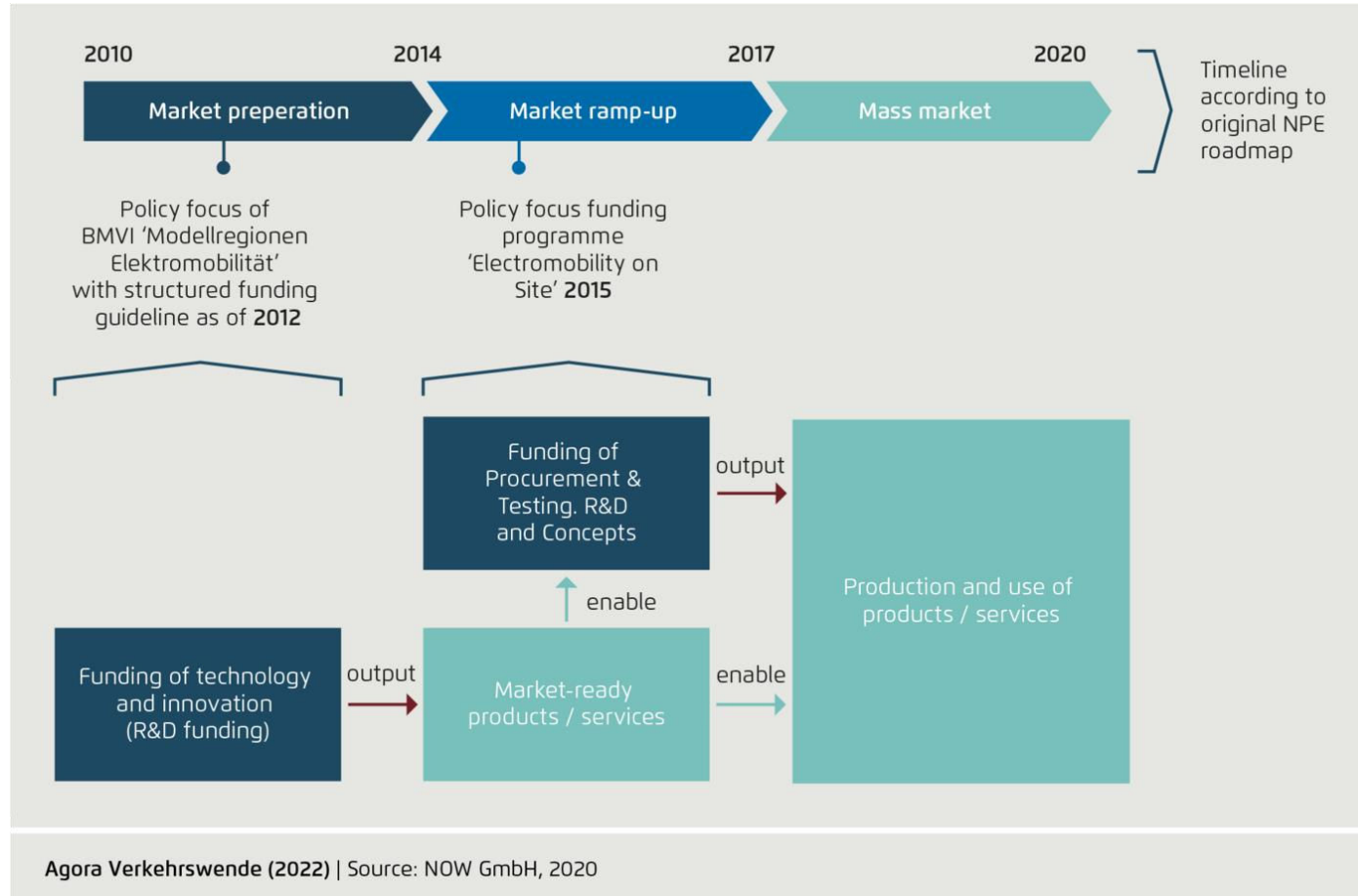


# Countries intending to phase out fossil fuel vehicles





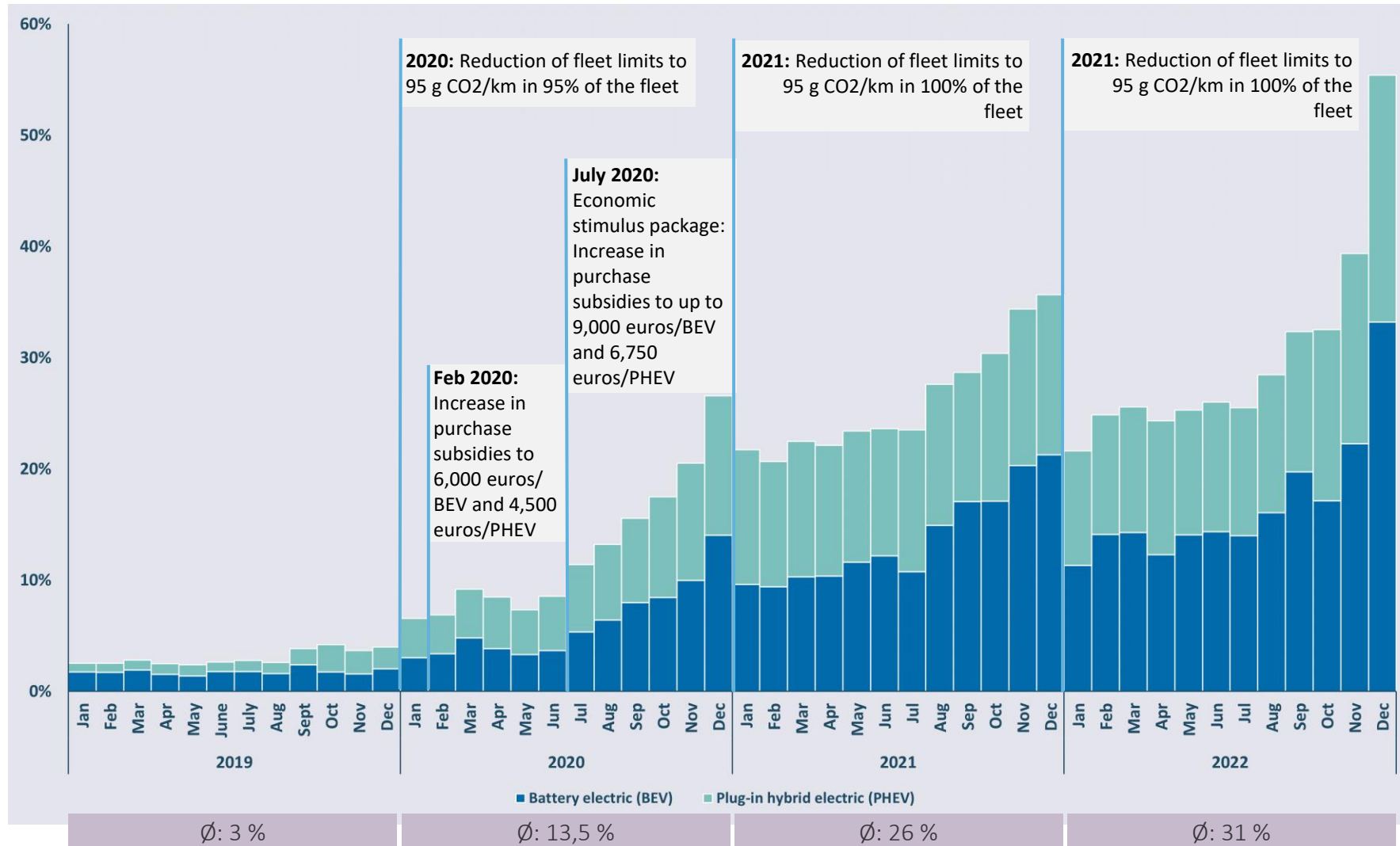
# Original National Platform for Electric Mobility (NPE) roadmap for market development in Germany



- **When did the move to e-mobility begin?**
- NPE was founded as an interdisciplinary advisory board tasked with developing a plan to reach the joint government–industry goal of putting one million EVs on the road by 2020
  - Original NPE roadmap anticipated the mass market phase to start in 2017
  - Increase in the numbers of newly registered electric cars could eventually be observed in 2020, after implementation of strengthened EU CO2 standards for new passenger cars

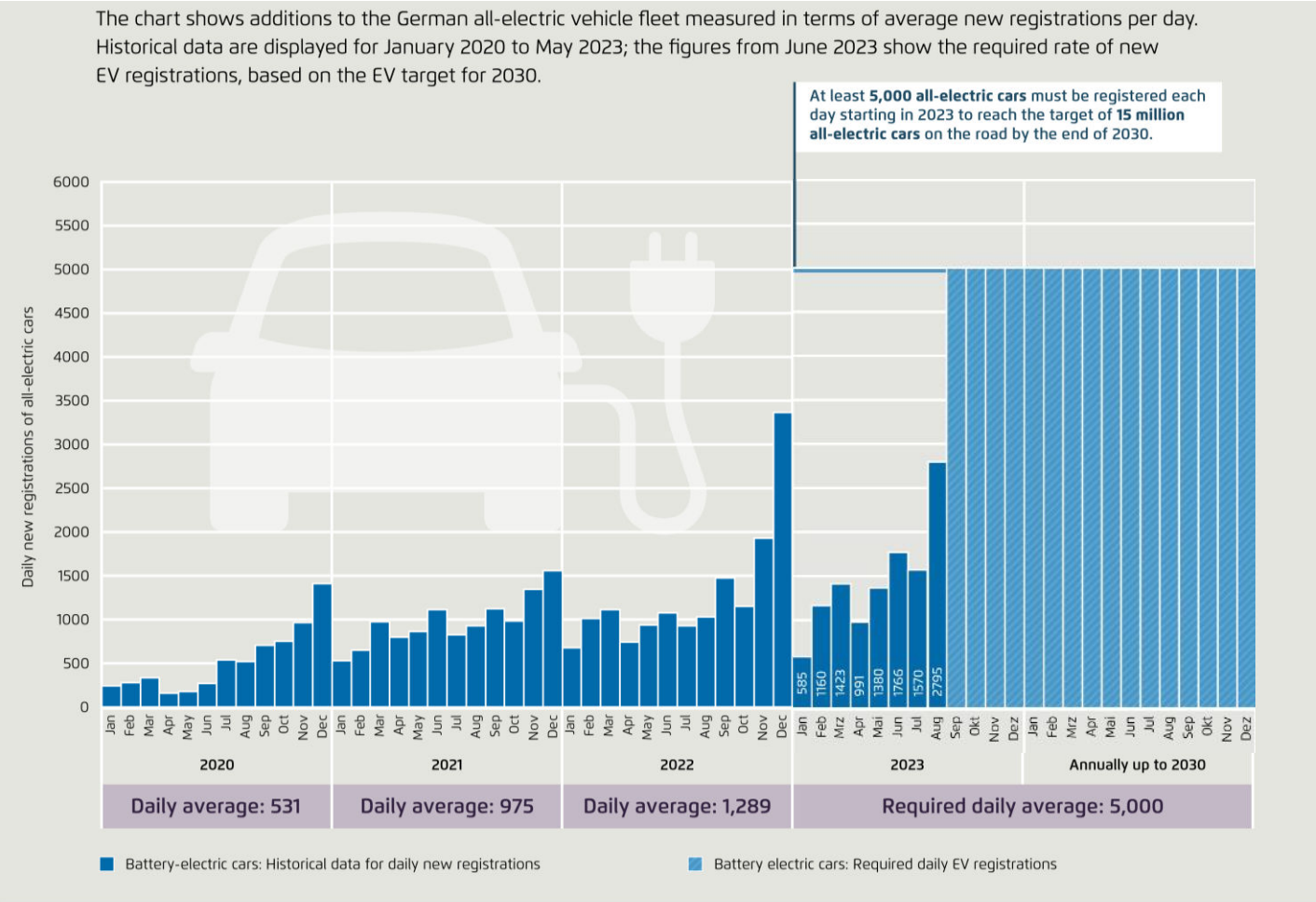


# Share of battery electric and plug-in-hybrid in passenger car sales in Germany (2019 to 2022)



- EV market share increased tenfold between 2019 and 2022
- Combination of push and pull policy measures
- EU fleet targets
- Tax reductions and purchase subsidies

# Stocktake – We are not there yet



- National target of **15 million BEVs in 2030**
- Fulfilling Germany’s EV target requires **5’000 new BEV registrations each day**
- Last minute sales increase in Aug 23 due to impending cut of purchase incentives for commercially registered vehicles
- We assume lower numbers overall in Sept 23

Agora Verkehrswende (06/2023) | The target rate for daily new registrations is derived from the German government's goal of have 15 million all-electric cars on the road by the end of 2030. There were approximately one million all-electric cars registered in Germany at the beginning of 2023. Sources: German Federal Motor Transport Authority, German federal government.

# Fiscal + purchase incentives for electric passenger cars in Germany

**Purchase grants for BEVs and PHEVs:**  
governmental subsidy, but OEMs obliged to contribute

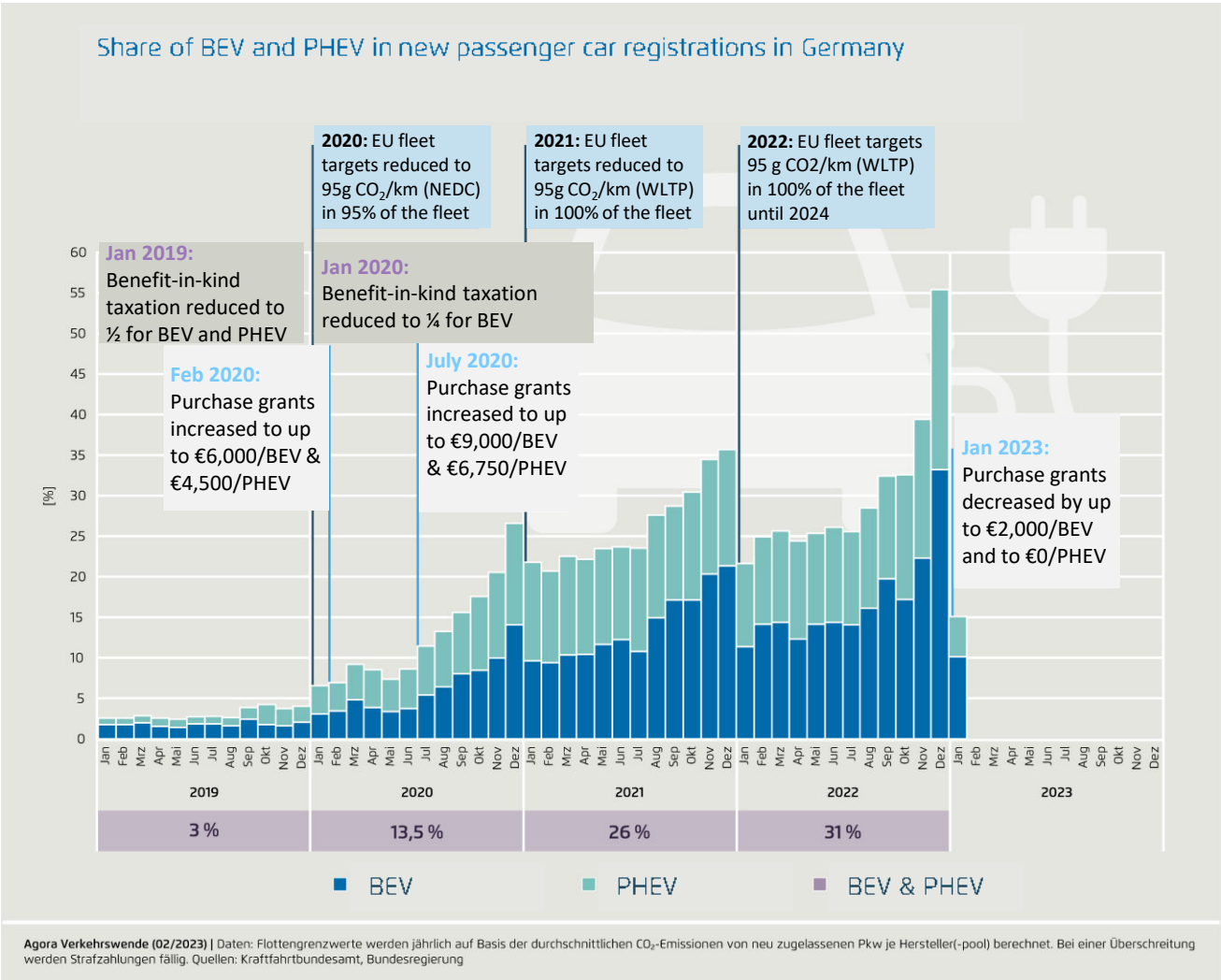
Purchase grants	Applicable for registrations from	Subsidy rate in €	Net list price in €	Manufacturers' share
<b>Introduction</b> of the purchase grant (“environmental bonus”)	18 May 2016	4,000 (BEV) 3,000 (PHEV)	≤ 60,000	1/2
<b>Increase</b>	05 Nov 2019	6,000 (BEV) 4,500 (PHEV)	≤ 40,000	1/2
		5,000 (BEV) 3,750 (PHEV)	40,000 – 65,000	
<b>Increase</b> (federal share only – “innovation premium”)	04 Jun 2020	9,000 (BEV) 6,750 (PHEV)	≤ 40,000	1/3
		7,500 (BEV) 5,625 (PHEV)	40,000 – 65,000	
<b>Decrease</b> (BEV) Removal (PHEV)	01 Jan 2023	6,750 (BEV)	≤ 40,000	1/3
		4,500 (BEV)	40,000 – 65,000	
<b>Phase-out</b>	01 Jan 2024	4,500 (BEV)	≤ 45,000	1/3

## Tax incentives:

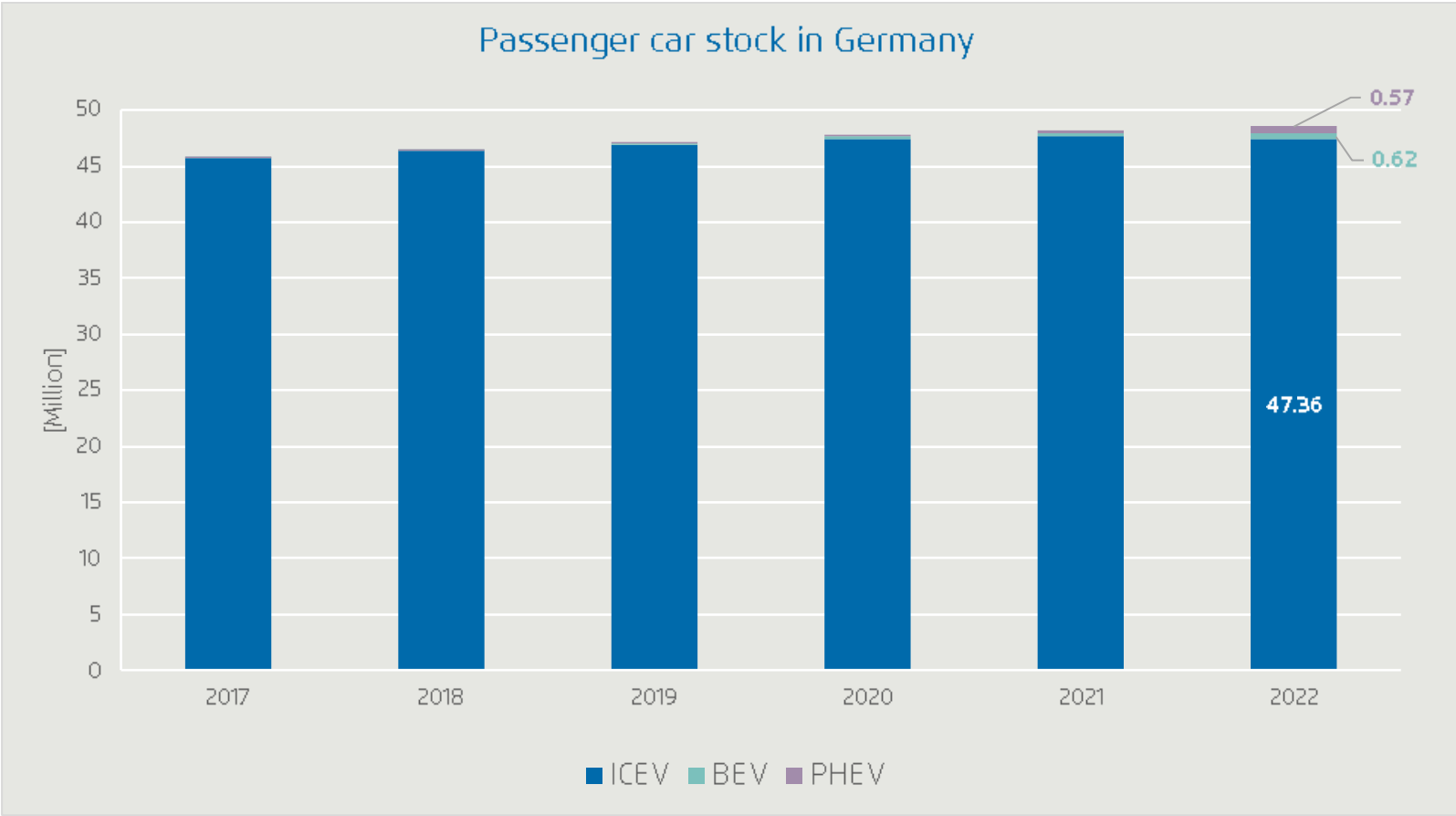
- Annual **car ownership tax**: exemption for BEVs, reduction for low-emission cars
- Taxable benefit-in-kind from the private use of **company cars**: up to 75% reduction for BEVs, 50% reduction for PHEVs
- **“GHG reduction quota”**: since 2022 up to €350 per year for BEV owners

# Share of BEV and PHEV in new passenger car registrations

- BEV share is higher among private cars (25% in 2022) than among corporate cars (14%) – and vice versa for PHEV
- Purchase grants for BEVs have been cut back in 2023, corporate cars not eligible from September 2023 onwards anymore
- complete phase-out of purchase grants likely in 2024 with subsidies capped (€2.1 billion in 2023, €1.3 billion in 2024)



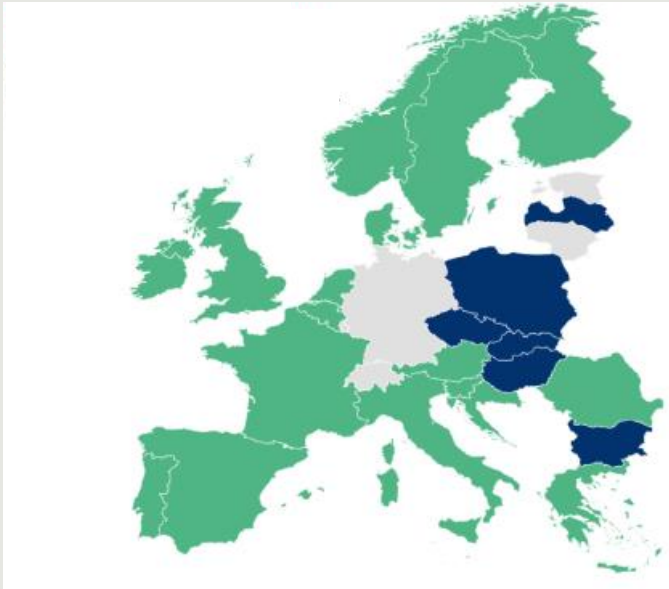
# Fleet composition still dominated by ICEVs in Germany



Source: own calculations based on Kraftfahrt-Bundesamt

# Ownership tax: increase effectiveness by focusing on the purchase decision

## Car acquisition taxation in Europe



Acquisition taxes based on...

- ...CO<sub>2</sub> emissions
- ...weight, engine capacity etc.
- No acquisition tax


Source: FÖS 2022 based on ACEA 2021

## Policy recommendations

The car ownership tax is bundled and levied at the time of first registration – as with acquisition taxes. The tax rate is progressive, with CO<sub>2</sub> emissions as the main tax base.


- **Economic efficiency:** For a given overall tax burden, using acquisition/registration taxes instead of annual ownership taxes could achieve a stronger steering effect toward the purchase of electric drives and fuel-efficient vehicles.
- **Fiscal sustainability:** Together with the premiums for BEVs, this creates a de facto bonus-malus system that could be designed to be largely revenue-neutral.
- **Equitable transformation:** Buyers of CO<sub>2</sub>-intensive cars bear the purchase premiums for BEVs.

# Fast ramp-up of electromobility - political instruments I

Instrument 	Current situation (updated 09/23)	Agora recommendation
<p><b>CO<sub>2</sub> fleet limits for new passenger cars and light duty vehicles</b></p>	<ul style="list-style-type: none"> <li>• Current limit: 95 g CO<sub>2</sub>/km</li> <li>• Tightening CO<sub>2</sub> fleet limits:               <ul style="list-style-type: none"> <li>– ICE phase-out in Europe as of 2035</li> <li>– 55% CO<sub>2</sub> emission reductions for new cars and 50% for new vans from 2030 to 2034 compared to 2021 levels</li> <li>– No adjustment of the 2025 limit with a view to the increased limit for 2030.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Tightening CO<sub>2</sub> fleet limits:               <ul style="list-style-type: none"> <li>– significant tightening of CO<sub>2</sub> limits for newly registered cars beyond the -55% proposed by the EU to up to -75% in 2030 compared with 2021</li> <li>– adjustment of the limit for 2025 with a view to the increased limit for 2030</li> <li>– switch to annualized reduction targets after 2025</li> <li>– Phase-out of ICE must take place by 2035 at the latest</li> </ul> </li> </ul>
<p><b>Investment support program for the conversion of Public transport to electric vehicles</b></p>	<ul style="list-style-type: none"> <li>• New investment support programme under discussion (09/2023)</li> </ul>	<ul style="list-style-type: none"> <li>• Introduction of investment support program that will enable the most extensive conversion of local public transport to electric vehicles by 2030.</li> <li>• Focus on the additional costs currently incurred, e.g., in vehicle procurement, additional vehicle requirements or the conversion of depots (e.g., for charging infrastructure and electrical installations).</li> </ul>
<p><b>Zero emissions rule for new public vehicles</b></p>	<ul style="list-style-type: none"> <li>• Current 2030 climate protection program states that federal ministries and subordinate authorities should purchase zero-emission vehicles <i>“if possible 40% by 2025 and if possible 100% by 2030”</i>.</li> </ul>	<ul style="list-style-type: none"> <li>• German government stipulates that only zero-emission vehicles are purchased as company cars from 2025.</li> </ul>



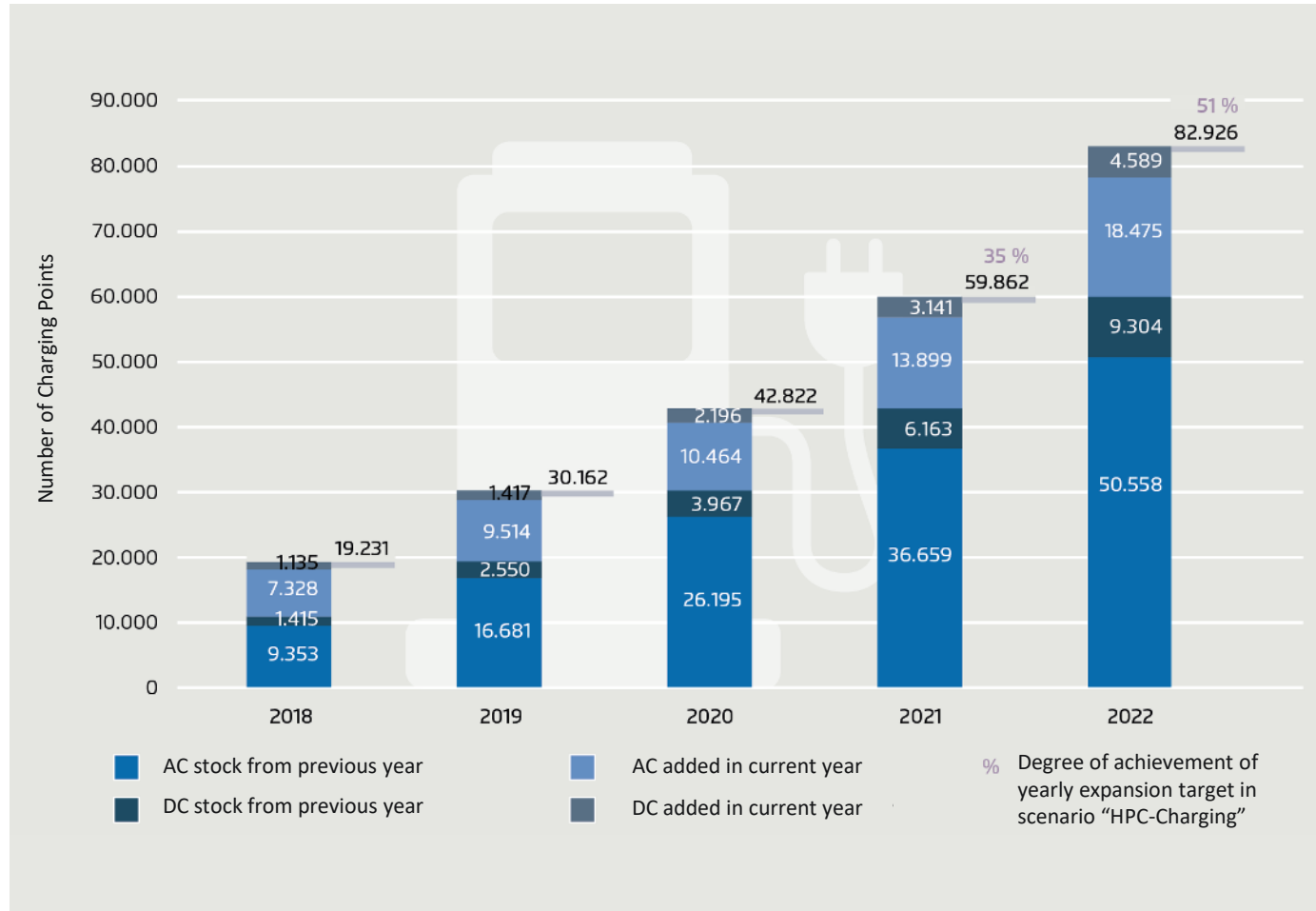
# Fast ramp-up of electromobility - political instruments II

Instrument 	Current situation (updated 09/2023)	Agora recommendation
<b>Reform German Car Taxation</b>	<ul style="list-style-type: none"> <li>• Current car taxation calculates higher tax rates for new passenger cars emitting &gt;95 g/km</li> <li>• Tax exemption for BEVs</li> <li>• Tax benefits for low emission cars</li> <li>• However: no tax increase for existing fleet</li> </ul>	<ul style="list-style-type: none"> <li>• The motor vehicle tax should be developed in such a way that it depends solely on CO<sub>2</sub> emissions</li> <li>• + that purchase premiums are financed by surcharges on the purchase price of high-emission vehicles (bonus-malus system) .</li> </ul>
<b>Reform German Company Car Taxation</b>	<ul style="list-style-type: none"> <li>• ~20% of new passenger cars in Germany annually registered as company cars</li> <li>• Current taxation provides monetary advantage for private mileage, especially for high-income employees</li> <li>• It also encourages employees and companies to purchase expensive, large and powerful cars and to use them extensively.</li> </ul>	<ul style="list-style-type: none"> <li>• Implement measures to reform company car taxation based on principles of <u>tax neutrality</u> (between private usage of company cars and private cars), <u>low emissions</u> and <u>social balance</u>, e.g.               <ul style="list-style-type: none"> <li>• adjusting the tax base for the purchase of company cars</li> <li>• Raising assumption values for taxable monetary benefit of private company car usage</li> <li>• Starting with raising the assumption values for ICE-cars (09/23)</li> </ul> </li> </ul>
<b>Zero emissions rule for new public vehicles</b>	<ul style="list-style-type: none"> <li>• Current 2030 climate protection program states that federal ministries and subordinate authorities should purchase zero-emission vehicles <i>“if possible 40% by 2025 and if possible 100% by 2030”</i>.</li> </ul>	<ul style="list-style-type: none"> <li>• German government stipulates that only zero-emission vehicles are purchased as company cars from 2025.</li> </ul>

# Fair prices in road transport - political instruments I

Instrument 	Current situation (updated 09/2023)	Agora recommendation
<b>CO<sub>2</sub> pricing</b>	<ul style="list-style-type: none"> <li>Germany introduced a CO<sub>2</sub> pricing system for transport fossil fuels in 2021</li> <li>Initially 25€/ t CO<sub>2</sub> and gradual rise up to 55€ in 2025.</li> <li>Price corridor of 55-65 € to be applied in 2026</li> </ul>	<ul style="list-style-type: none"> <li>Steeper increase up to 60€ in 2023 and start of trading with price corridor in 2024 at 60-80€.</li> <li>Annual increase of initially 100€ in 2025</li> <li>Support of EU emissions trading system from 2026 onwards</li> </ul>
<b>Per capita climate bonus</b>	<ul style="list-style-type: none"> <li>Current instrument in Germany: RE levy (“EEG-Umlage”) paid by electricity customers for financing renewables</li> <li>The RE levy was introduced in 2000 and has seen numerous revisions; temporarily reduced to 0 in 2022</li> </ul>	<ul style="list-style-type: none"> <li>Reduction and later abolishment of RE levy in 2025; RE financing through Energy and Climate Fund with revenue from CO<sub>2</sub> price</li> <li>Remaining fund resources to be used for a “per capita climate bonus”.</li> <li>“Hardship fund” for low-income households to support their switch to low-emission alternatives → support of EU proposal for climate social fund from 2026</li> </ul>
<b>Tax system reform</b>	<ul style="list-style-type: none"> <li>Current system: implicit privilege for diesel tax over gasoline in energy tax and motor vehicle taxes</li> </ul>	<ul style="list-style-type: none"> <li>Abolishment of implicit diesel privileges</li> <li>Support of new EU Energy Taxation Directive version: taxation solely on the basis of energetic capacity and environmental quality of fuels, ranking of actual tax rates of different energy sources corresponding to the ranking in minimum values.</li> </ul>

# Public charging point growth in Germany from 2017 to 2022




→ Goal of German Government is to put one million charging points on to the roads by 2030 for a fleet of 15 million all-electric cars

→ There are about 93'000 public charging points in Germany (Ladesäulenregister BNetzA, June 2023)


→ We need about 440'000 to 843'000 public charging points in 2030

→ In order to reach HPC-scen goal we need to double roll-out speed

# Fast ramp-up of electromobility - political instruments III

Instrument 	Current situation (updated 09/2023)	Agora recommendation
<b>New master plan for charging infrastructure (1):</b>		
Reform of building regulations and licensing law	<ul style="list-style-type: none"> <li>Currently, many different building codes, parking space statutes and licensing laws create a difficult and lengthy process for building new charging points</li> </ul>	<ul style="list-style-type: none"> <li>Federal government to encourage states to reform building regulations and licensing law so that approval and construction of charging stations is simplified</li> </ul>
Unification of the connection rules	<ul style="list-style-type: none"> <li>Current legal framework prescribes many different connection rules</li> </ul>	<ul style="list-style-type: none"> <li>Standardization of grid connection conditions for charging infrastructure throughout Germany, e.g., with regard to the deadlines for testing by the grid operator.</li> </ul>
Legal reforms for time-variable network tariffs, power price and bi-directional charging	<ul style="list-style-type: none"> <li>A recent proposal by Bundesnetzagentur (BNetzA) paves the way for time-variable network tariffs in Germany.</li> <li>Legislation passed in May 2023 makes it obligatory for all power suppliers to offer dynamic prices for the energy procurement component of the power price, starting in 2025.</li> <li>No technical prerequisites for bidirectional charging yet.</li> </ul>	<ul style="list-style-type: none"> <li>Time-variable network tariffs for end customers are introduced in the current legal framework. This increases the incentive to charge at different times (smart charging).</li> <li>In addition, the technical prerequisites are being created to rapidly establish bidirectional charging.</li> </ul>

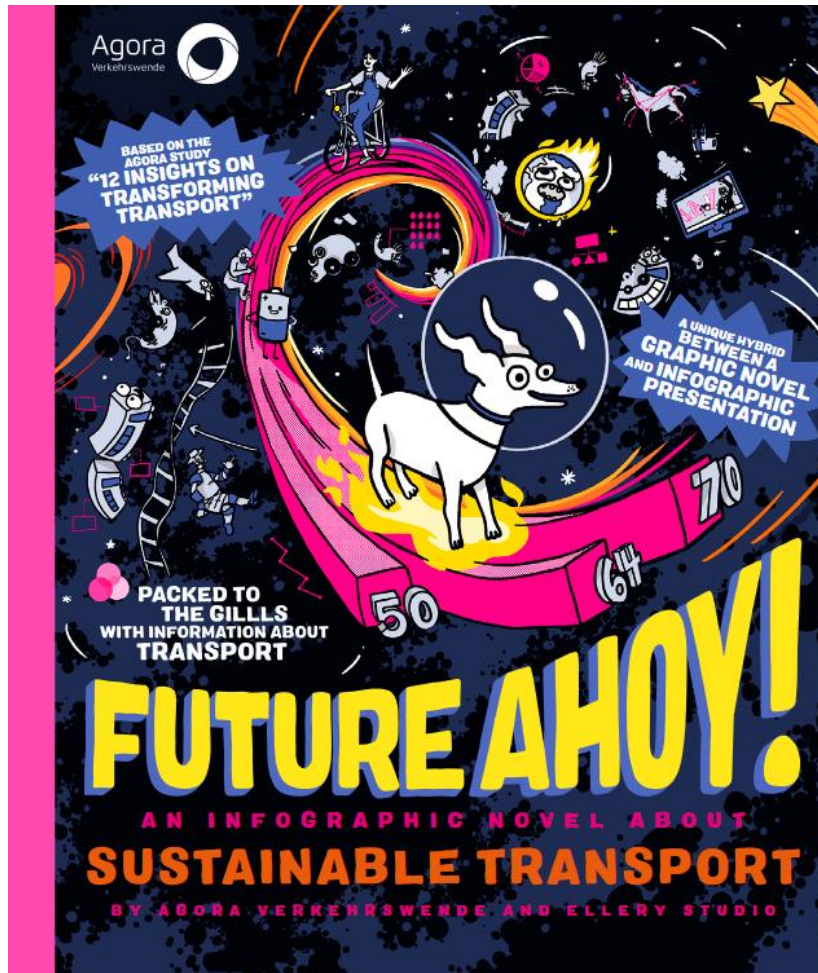
# Fast ramp-up of electromobility - political instruments IV

Instrument 	Current situation (updated 09/2023)	Agora recommendation
<b>New master plan for charging infrastructure (2):</b>		
<b>Potential obligation for filling stations to install fast-charging infrastructure</b>	<ul style="list-style-type: none"> <li>The government has agreed to propose such an obligation in the near future (09/23).</li> </ul>	<ul style="list-style-type: none"> <li>Such an obligation would be useful and help city administrations to provide a minimum of charging infrastructure.</li> </ul>
<b>Staff expansion for planning and approval of charging infrastructure</b>	<ul style="list-style-type: none"> <li>Lack of staff in the organisation of charging infrastructure expansion in municipalities and cities</li> <li>Some positions have been agreed in principle in National Masterplan Charging Infrastructure II.</li> </ul>	<ul style="list-style-type: none"> <li>Funding of positions for charging infrastructure managers</li> </ul>
<b><u>EU minimum requirements for charging infrastructure</u></b>	<ul style="list-style-type: none"> <li>Alternative Fuel Infrastructure Regulation (adopted as part of the EU Green Deal)</li> <li>Sets minimum requirements for the installed charging capacity per vehicle (1,3 kW) and for the maximum distance between two fast-charging stations on highways (60 km) as part of a regulation for the whole EU</li> </ul>	<ul style="list-style-type: none"> <li>Support of the establishment of quantitative minimum requirements for the installed charging capacity per vehicle and for the maximum distance between two fast-charging stations on highways as part of the EU regulation currently under discussion</li> </ul>

Thank you for your attention!

Any questions?

## Further reading



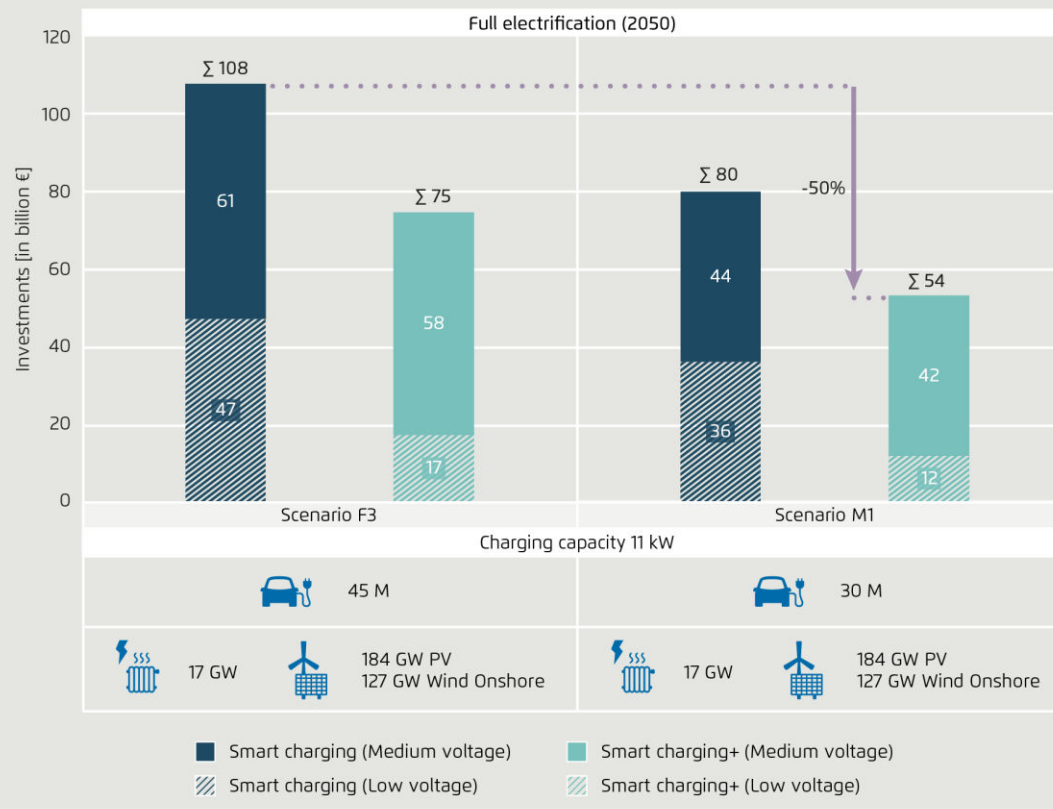
- Future Ahoy! An infographic novel about sustainable transport
- Managed Charging – A Primer
- Driving the Wheels of Change. The Verkehrswende, Five Years On



# Distribution grid planning for a successful energy transition – focus on electromobility

Reduction of the cumulative distribution network investment needs through smart charging+ and the mobility transition

Figure 4



Navigant, Kompetenzzentrum Elektromobilität, RE-xpertise (2019)

## Thank you!

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In case of comments or questions, please don't hesitate to contact me:

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