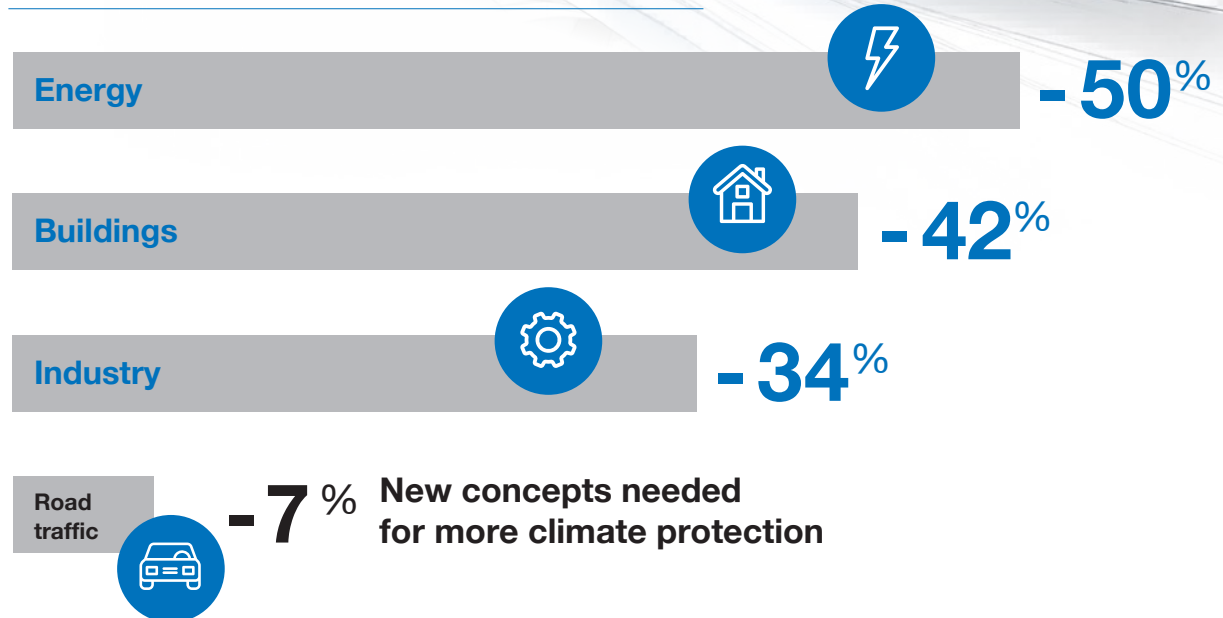


CO₂ emissions of selected sectors in Germany, 1990-2020



-7% New concepts needed for more climate protection

VDE Policy Brief

Edition 2/2021

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Climate goal: zero emissions

How politicians and the automotive industry achieve this goal

The auto industry is on the way to climate neutrality. Within this context, political guidelines as well as mutual understanding between companies and politicians are essential – the VDE brings the perspectives together and points out next steps for the transformation.

The eight participating opinion leaders from politics and 19 from business are united by a positive vision: zero emissions in the transport sector. What are the next steps from the perspective of the mobility experts?

- **Institutionalize dialog:** The continuous transfer of knowledge between politics and business accelerates the transformation. Targeted dialog opportunities should be created for cross-sector, cross-economic and cross-party exchange.
- **Expand infrastructure:** Accompanying business investments, policymakers must present a clear roadmap on how to promote and accelerate the infrastructure of the future. This applies to the generation and distribution of climate-neutral electricity as well as to the expansion of battery charging and hydrogen infrastructure.
- **Removing regulatory hurdles:** For the transformation to succeed, regulatory hurdles must be removed and standardization projects must be supported. Key topics: Expansion of charging infrastructure and intelligent load management, uniform standards for charging and payment at charging stations, and promotion of battery expertise in Germany.

- **Facilitating access to capital:** If innovative drive technologies are to be developed and produced in this country instead of in China and the USA, young companies in particular need access to capital. Substantial venture capital is also needed for the subsequent leap from hidden to global champion.
- **Bringing people along:** Germany needs a spirit of optimism for climate-neutral mobility. A manufacturer-independent and technology-neutral communications campaign is the right start. In addition to ecological considerations, the focus must be on the needs of the population – comfortable and affordable mobility, both in rural and urban areas.

Participants from the political arena

Mario Brandenburg, MP (FDP), Dr. Anna Christmann, MP (B90/Grüne), Karl Holmeier, MP (CDU/CSU), Arno Klare, MP (SPD), Daniela Kluckert, MP (FDP), Falko Mohrs, MP (SPD), Cem Özdemir, MP (B90/Grüne), Johannes Wieczorek, BMVi (Federal Ministry of Transport and Digital Infrastructure)



VDE Study

Drive portfolio of the future

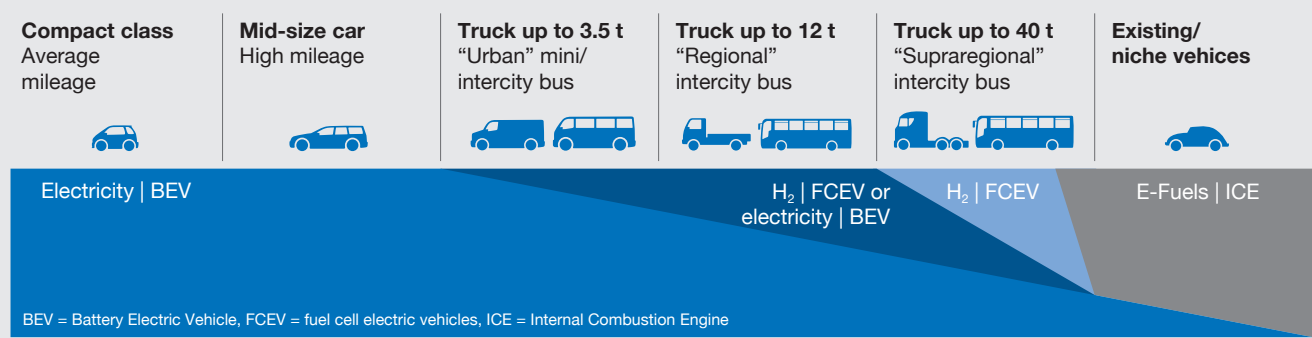


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Drive portfolio 2030+

The available climate-neutral drive technologies – battery, fuel cell and e-fuels – have specific strengths and weaknesses. What is needed, therefore, is an intelligent mix to achieve the zero-emission goal.



Looking ahead to 2030

Drive technologies and energy concepts

The German government wants to reduce CO₂ emissions by 65 percent by 2030 compared to 1990, instead of 55 percent as previously planned. Germany is to be climate-neutral by 2045. Which drive concepts support this goal – and what does this mean for the energy market?

Focus on battery and fuel cell

Batteries and fuel cells are becoming the dominant drive concepts. The global number of electric vehicles will rise from 4.8 million in 2019 to 150 million by 2030. In turn, flexible and technically mature offerings will then be available for heavy-duty and long-distance transport, which will enter series production accordingly. The most urgent political tasks thus include issues surrounding the promotion of new technologies and sales markets as well as the charging infrastructure.

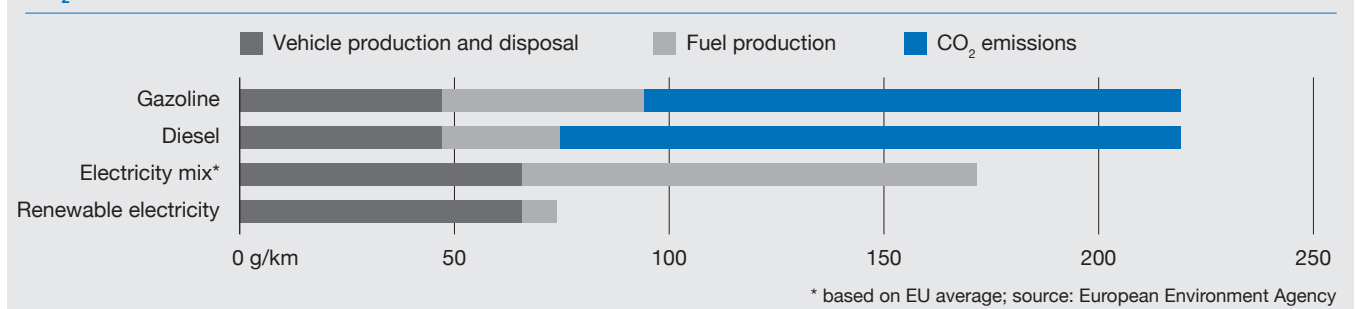
Setting up the energy market appropriately

In order to enable electromobile logistics and mobility in the long term, the energy market must also be taken into account. In Germany, the demand for electricity – which will increasingly have to be covered by renewables – will rise by a quarter by 2030 alone. Key tasks are:

- **Reform EEG:** To promote e-mobility and offer production incentives to small-scale electricity producers, the Renewable Energy Sources Act (EEG) must be further reformed. Self-generated green electricity should be exempt from the EEG levy when resold to neighbors or tenants, for example.

- **Making better use of renewable energies:** In order to ensure the stability of the power grids, renewable electricity currently has to be shut off again and again when the wind is strong and the sun is shining. To avoid this, flexible solutions such as stationary storage batteries or conversion to hydrogen are needed.
- **Promote development in line with demand:** The energy demand for electric and fuel cell vehicles should be continuously investigated and forecast with a 2050+ perspective. This fundamental knowledge is essential in order to derive the demand for renewable energies and the effects on the power grids as well as corresponding measures for grid stabilization and expansion.
- **Better utilization of transport modes:** Transport demand will continue to grow. Policymakers must specifically promote innovative concepts to increase the capacity utilization of vehicles and thus save valuable energy. For example, inner-city shuttle concepts should serve less as a cab alternative and more as a feeder service that also provides access to peripheral areas of the urban area without regular service.

CO₂ emissions of transport in the EU



VDE study

Logistics, Energy and Mobility 2030



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Pretend people, bots and disinformation

Enabling trustful dialog on the web

Am I having a discussion with a real person or a fake one, a social bot? Unlike two or three years ago, their photos, videos and conversations appear so genuine that they can hardly be recognized as fakes. What is particularly dangerous is that bots are increasingly being used for manipulation. If this trend continues unchecked, the democratic formation of opinion is at stake.

For young people in particular, the internet is the most important source of political information. News portals, social media platforms and messenger apps offer ideal points of attack for mood campaigns using bots. A solution that has been discussed time and again is to make it compulsory for users to use their real name. However, this would be a massive encroachment on freedom of expression – ideal for authoritarian regimes, but unacceptable for democracies.

Establishing authentic pseudonyms

Authentic pseudonyms offer a way out. The core idea is that citizens can use only one pseudonym per platform – be it an online medium, Facebook or a rating portal. This is made possible by the person registering with a so-called trust anchor. For example, a previously unused cryptographic function in an ID card that does not reveal the person's real name is suitable for this purpose.

The technologies for implementing authentic pseudonyms are ready. The concept could be established by 2025. Political support is a prerequisite:

- **Anchor topic in the coalition agreement relates to the fact that the goal of enabling a trusting dialog between demonstrably genuine people on the web is part of the provision of public services and must be prioritized accordingly by the upcoming federal government.**
- **Points of contact must be created – the benefits of authentic pseudonyms are obvious, but they must be experienced in everyday life. Politics can ensure this, see citizen dialogs, petitioning or online debates.**
- **Facilitate implementation – companies need incentives to introduce authentic pseudonyms. Government-sponsored tools and open-source libraries would be an important stimulus.**

VDE is a global pioneer with the concept of authentic pseudonyms. For example, the organization is hosting a technical event next fall with some 200 politicians, NGOs, scientists and entrepreneurs. The topic needs to gain momentum.

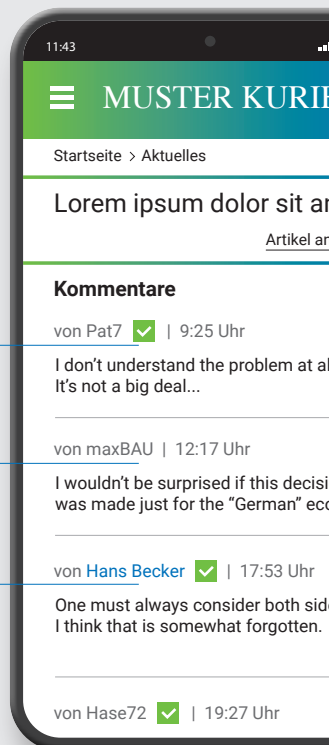


Video

Conference presentation from March 9, 2021

Does the commentator really exist?

Authentic pseudonyms could create trust and transparency in web discussions and forums in the future.



Pat7 ✓

Pseudonym,
authenticity verified

maxBAU

Pseudonym,
authenticity not verified

Hans Becker ✓

Real name,
authenticity verified

AI quality testing

Seizing opportunities for Germany

Whether resource efficiency, autonomous driving or diagnostics: AI solutions offer prospects for sustainable economic growth. China, the USA and Europe in particular are battling for technology leadership. A key criterion for this is quality testing – the VDE now wants to set the standards with the state government of Hesse.

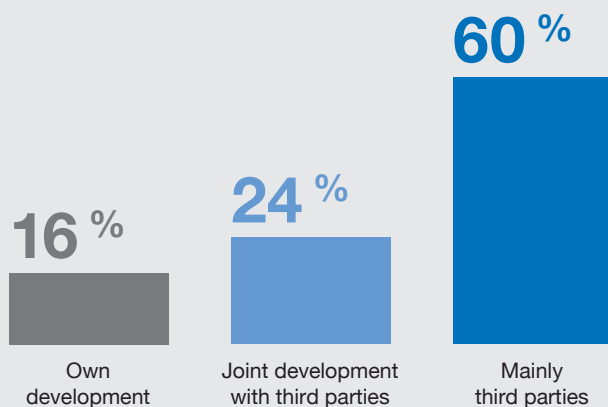
The quality of conventional technology is ensured through standardization. Only in this way can safety and consumer protection be uniformly verified worldwide. German companies have always benefited from this in competition. But in AI applications, they can only exploit this advantage to a limited extent, since globally recognized quality criteria are lacking for both the algorithms and the data used in each case.

Assuming quality leadership

The fact that innovation leadership in AI quality testing is still up for grabs also offers Germany an opportunity of the century. Because whoever is the first to solve the challenges of AI quality testing worldwide will influence both further market development and global AI regulation. Quality testing made in Germany can thus play an essential role for Europe's digital sovereignty.

German business largely trusts third parties for AI developments

79 percent of German companies describe AI as significant or critical to their success. For the most part, they have to trust third-party developments that are not subject to defined quality criteria. In addition, they usually acquire data on a large scale. The risks are considerable. AI originates from:



Source: ZEW, German Innovation Survey 2019

VDE builds quality lab

Together with partners from industry, the start-up scene, science and government agencies, VDE will now establish the AI Quality & Testing Hub in Hesse. Three concrete goals are:

- **Enabling AI quality testing:** testing structures and processes must be largely rethought for AI applications. The AI Quality & Testing Hub aims to achieve the breakthrough.
- **Establish “AI made in Germany”:** Germany is taking on the global leadership role for AI quality. This offers important future prospects, especially for key industries such as automotive and mechanical engineering.
- **Dovetailing the value chain:** Through intensive cooperation between partners, AI applications reach series maturity faster – tested and certified.

The VDE will set new standards with the AI Quality & Testing Hub. At the same time, the federal and state governments must continue to push the issue. The key tasks are named in the report of the AI Commission of Inquiry: advance human-centric AI through standardization, provide more resources for AI research, and minimize discrimination risks, especially through certification.



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VDE as Germany's voice for AI quality testing

VDE recognized the issue of AI as essential years ago and positioned itself accordingly. For example, VDE provides the head of the central AI body in the European standards organization CEN-CENELEC and the coordinator of the Franco-German Joint Task Force on AI testing and AI certification. In addition, VDE participates – whether directly or indirectly – in numerous bodies relevant to AI applications.

Enabling transition periods

Germany's electricity is becoming climate-neutral. This also applies to transmission and distribution, current example: the insulating gas sulfur hexafluoride (SF₆) – whose greenhouse potential is considerable – is to be dispensed with in the future. The Forum Network Technology/Network Operation in the VDE (VDE FNN) shows how this can be achieved.

On its way from the power plant or an offshore wind turbine, electricity is routed several times through switchgear and transformers until it reaches the consumer. In these plants, the fluorinated gas SF₆ has been used for decades for insulation and switching. This allows the plants to be built and operated in a particularly space-saving, economical and safe manner. Now restrictions are planned for new plants. By the end of 2022, the EU wants to revise its regulation on fluorinated greenhouse gases so that SF₆ in particular is gradually replaced.

SF₆ target exceeded

In 2005, manufacturers and operators agreed to reduce SF₆ emissions to 17 tons by 2020. The target has been significantly exceeded – the VDE has driven this development.



Position paper

Reasonable transition periods recommended

Enabling practical transition periods

At the beginning of April, VDE FNN drew up a roadmap. Provided the new regulation comes into force in 2023, significant challenges are expected in introducing the alternatives. The aim is to keep the transition periods for SF₆-free alternatives to a minimum. Depending on the area of application, they are to be introduced in all new switchgear in the following five to nine years. Why is this period necessary?

- **Manufacturer perspective:** the EU Commission noted in 2020 that “it will take some time for manufacturers to develop the full range of products.” After intensive testing, the individual product lines must be transferred to series production in order to meet demand.
- **Customer perspective:** If network operators can obtain SF₆-free alternatives from different manufacturers, they must test their performance, safety and service – on paper and in operation. Employees must be trained and specifications adjusted. In addition, new switchgear must be taken into account in conversion projects, some of which last several years. Approval and bidding processes take time.

Measured against Germany's total greenhouse gas emissions, SF₆ from electrical equipment accounts for 0.03 percent. With the recommendations of VDE FNN, Germany is a pioneer in the EU and paves the way to a climate-neutral future.

Example electricity meter: VDE FNN important partner for the energy transition

Smart metering systems show electricity consumption in quarter-hourly values. This makes it easier for households to identify electricity-intensive appliances and potential savings. In accordance with the requirements of the Metering Point Operation Act, installation was finally able to start last year. The urgent ruling by the Münster Higher Administrative Court at the beginning of March uncovered ambiguities in the Metering Point Operation Act, which the legislature now wants to eliminate quickly. VDE FNN, together with the Federal Ministry for Economic Affairs and Energy (BWi) and other stakeholders, has prepared appropriate adjustments in a very short time. The clarifications promote the further rollout of smart metering systems as a building block of the energy transition. VDE FNN bundles the knowledge of more than 470 members, including the leading technology manufacturers, grid operators, energy suppliers, plant operators and scientific institutions.



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The VDE – the technology organization



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Facts and figures

	Founded:	1893
	Headquarters:	Frankfurt
	Employees:	Worldwide 2,000
	Volunteer experts:	More than 100,000
	Locations:	Worldwide over 60
	Research and funding projects:	175
	Events per year:	Over 1,600
	Product inspections per year:	25,000
	Electrical products bearing the VDE mark:	Billions
	Norms and standards:	Over 3,500