3.4
Ø Assessment

3

2   4

Competitiveness will…

1   ✚   ➖   5
increase   decrease
sharply   sharply

Opinion leaders from politics and business expect German car manufacturers to become less competitive by 2035.

VDE Policy Brief

Edition 2/2024

VDE Policy Brief online

VDE

Resilient automotive location Germany 2035

Maintaining competitiveness

Digitalization and electromobility are fundamentally changing Germany's automotive industry. In light of the challenges, politics and industry must develop a common understanding of the appropriate political framework conditions. VDE is making a contribution to this with its new Automotive location Germany 2035 study.

For the study, VDE interviewed 30 opinion leaders from politics and business. Three central positions have emerged that are shared by policymakers and business along the entire value chain. Firstly, resilience and competitiveness must be strengthened. Secondly, productivity and innovative capacity must be increased. Thirdly, cost-effective electric cars made in Germany are needed. This large-scale agreement – even across political groups – is remarkable.

From the perspective of the study participants, the following issues now need to be addressed:

- **Reducing overregulation:** Companies and start-ups need more freedom and fewer bureaucratic requirements in order to be able to develop innovative prowess. Framework conditions for AI research and autonomous driving must be improved. Lengthy approval procedures make it extremely difficult to expand production areas and convert them for new technologies.

- **Combating the shortage of skilled workers:** The shortage of skilled workers is the primary challenge. Measures such as more flexibility in working hours and pay as well as the promotion of full-time work are necessary to counteract this. Controlled immigration of skilled workers must also play a role.

- **Launching a productivity offensive:** AI, automation and digitalization must be used to increase productivity. Fears that new technologies will jeopardize jobs are unfounded – on the contrary, they secure competitiveness and prosperity in Germany.

Tackling the shortage of skilled workers

The shortage of skilled workers will worsen dramatically by 2035. To close the gap and maintain competitiveness, companies must massively increase their productivity – automation and the use of AI in particular are leading the way.

More productivity through automation and AI

Immigration of skilled workers

100 % **More full-time work**

Further training, more students

- **Reforming the education system:** The establishment of lighthouse universities and more intensive collaboration with leading international universities are crucial to improving educational standards and attracting top talent. In addition, a reorientation of the public perception of STEM professions is urgently needed – the promotion of future careers in technology must begin in kindergarten.

Interviewees

Participants from the German Bundestag: Thomas Bareiß, MdB (CDU/CSU), Dr. Sandra Detzer, MdB (B90/Greens), Reinhard Houben, MdB (FDP), Thomas Jarzombek, MdB (CDU/CSU), Bernd Reuther, MdB (FDP), Prof. Dr. Stephan Seiter, MdB (FDP), Bernd Westphal, MdB (SPD), Dr. Klaus Wiener, MdB (CDU/CSU).

Save the date

VDE E-Mobility Conference on November 20 and 21, 2024 – under the patronage of the Federal Minister of Transport Dr. Volker Wissing. THE platform for exchanging knowledge and jointly driving forward innovations in the field of electromobility.

VDE study
Automotive location Germany 2035

VDE website
Press material on the study

VDE website
Mobility sector

Article from VDE Policy Brief 2/2021
Predecessor study: Drive portfolio of the future

AI Act

Flesh out the law and strengthen Europe

The EU passed the AI Act in mid-May. Key premise: The higher the risk of an AI application, the stricter the requirements – consumer protection is a top priority. The majority of the law will come into effect in July 2026, so companies need to be prepared by then.

Complex questions arise in the process: How can it be technically ensured that the prescribed risk and quality management for AI applications is complied with? How do AI manufacturers and users need to proceed to ensure transparency, accuracy, resilience and cyber-security? How does compliance testing work? These are questions that explore the limits of what is technically feasible. VDE is doing pioneering work to enable efficient implementation.
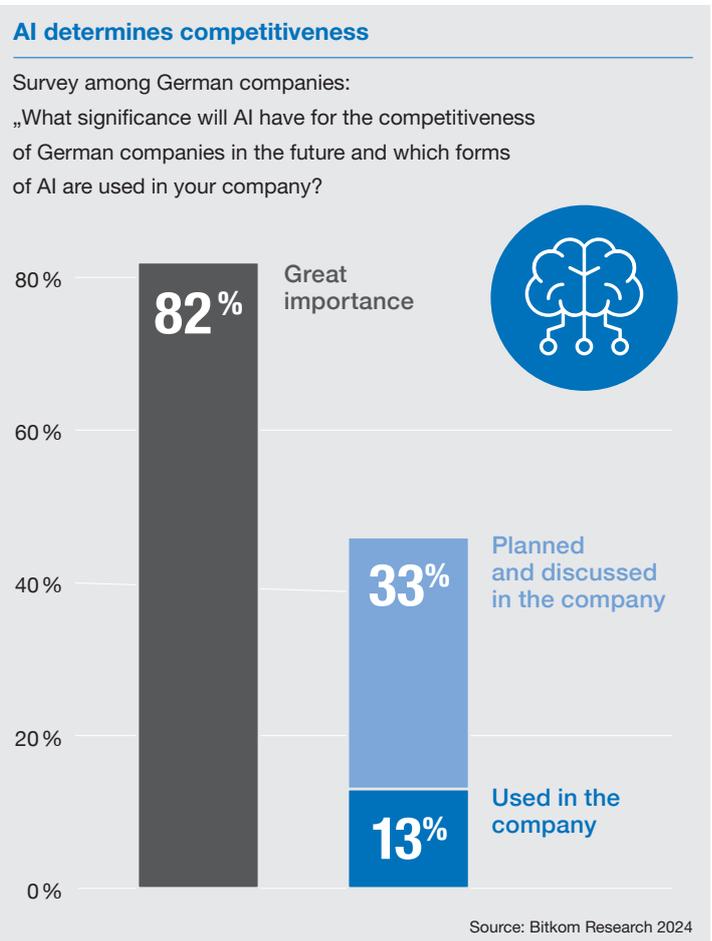
Harmonized standards point the way

On behalf of the EU Commission, the European standardization organizations CEN and CENELEC will develop the necessary standards by the end of 2025. Under the chairmanship of Dr. Sebastian Hallensleben from VDE, around 140 experts from 24 countries are involved in this work. There are also well over 1,000 people involved at national level. In an ongoing consensus process, they are working closely with the EU Commission to develop harmonized standards that describe a voluntary but officially accepted way to implement the AI Act and thus provide legal certainty. This process has been established for decades as the "New Legislative Framework", but is not always used. The General Data Protection Regulation (GDPR), for example, did not include this. Negative consequences: contradictory interpretations of the law, uncertainty on all sides and annoying additional work for companies.

VDE website
Artificial intelligence

Tagesspiegel background
Authored article Dr. Sebastian Hallensleben: Trust as the most valuable resource

Article from VDE Policy Brief 4/2023
Promoting AI made in Germany

Article from VDE Policy Brief 3/2023
AI-supported deepfakes

ChatGPT & Co.?

Generative AI – see language models such as ChatGPT – are covered by the AI Act with separate regulations and do not come under the ongoing standardization work. Instead, the newly established AI Office of the EU will develop guidelines for this important area in the consultation process within a year. The focus could, for example, be on test methods and performance metrics, resource consumption and licensing issues relating to training data. Topics on which VDE will be intensively involved in the coming months.

AI determines competitiveness

Survey among German companies:
„What significance will AI have for the competitiveness of German companies in the future and which forms of AI are used in your company?

- 82% Great importance
- 33% Planned and discussed in the company
- 13% Used in the company

Source: Bitkom Research 2024

Balcony power plants

VDE provides safety

VDE is driving forward the energy transition. It is developing technical solutions and making recommendations on political framework conditions. What also makes the technology organization unique is its focus on maximum safety; see the example of balcony power plants.

The German government's Solar Package I came into force in mid-May. It makes it much easier and less bureaucratic for private households to install plug-in solar devices. What has changed since then for the so-called balcony power plants:

- **More power:** The systems can now feed into the public electricity grids with an inverter apparent power of 800 volt-amperes (VA); previously, the limit was 600≈VA. This means that each individual balcony power plant can contribute a little more to the energy transition.

- **Less bureaucracy:** Anyone installing a plug-in solar device now only has to notify the Federal Network Agency. The grid operator – who previously had to be notified separately – will be informed automatically. Grid operators must nevertheless be able to ensure that only certified plug-in solar devices are connected to the grid. An interoperable database must be created for this purpose.
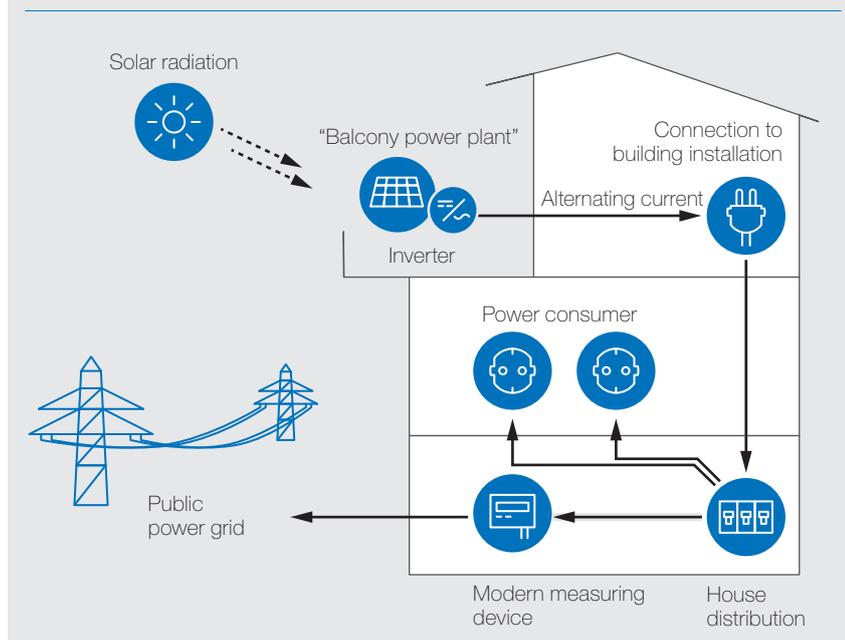
- **Plug & Power:** Households may temporarily commission balcony power plants independently of the existing electricity meter. Whether a bidirectional meter needs to be installed will be checked when the system is registered with the Federal Network Agency.

These changes are essential for balcony power plants to make a contribution towards the energy transition in future. VDE had already outlined them in its position paper from January 2023 and played a key role in driving forward the political debate.

Making balcony power plants safer

At the same time, VDE is driving forward the issue of safety. Background: Balcony power plants consist of three components: **module, inverter and connection cable**. Although each of these must be certified for safety when sold in Germany, there is no corresponding standard for the overall system. The risks that first arise when the components interact are considerable.

The standardization organization DKE, which is supported by VDE, is providing a remedy: before the end of this year, it intends to publish the world's first product standard for complete balcony power plants. This also paves the way for balcony power plants to be connected easily and safely to conventional sockets.

Balcony power plants:
Safe interaction of all components is essential

- **VDE FNN website**
  Plug-in PV systems

- **Article from VDE Policy Brief 3/2023**
  PV expansion: VDE guarantees safety

- **Article from VDE Policy Brief 4/2022**
  Using innovative energy sources safely

Decentralized electricity market
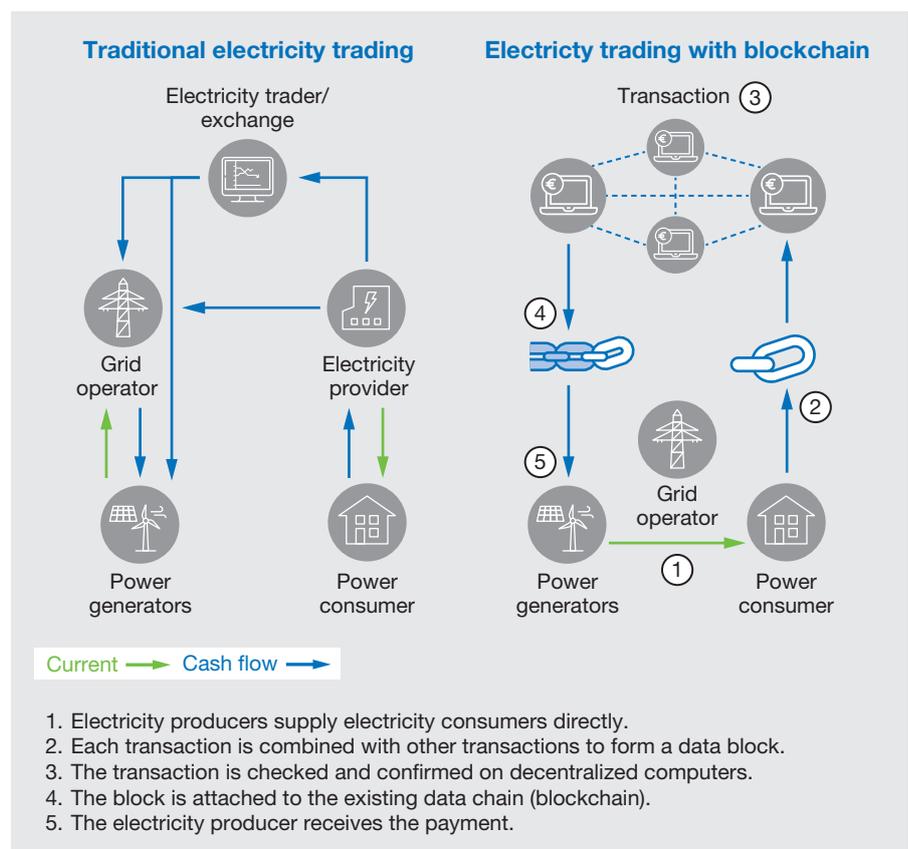# Maintaining an overview

In 2000, around 80,000 producers in Germany were still feeding electricity into the grid. Today, the number – driven in particular by the expansion of photovoltaic systems – is in the mid-single-digit million range. By 2040, it is even expected that there will be around 50 million players who are both consumers but can also act as suppliers for short periods. How can this decentralized electricity market be managed in the future?

Self-organization is the magic word. Distributed ledger technologies, better known as blockchain, offer the prerequisites for this. They have established themselves as ledgers for cryptocurrencies such as Bitcoin and can also manage self-organized transactions on the energy market. The advantages: they are forgery-proof, offer maximum transparency and can be used automatically around the clock.

At the same time, the potential of blockchain technology is not limited to billing issues: based on twelve use cases, VDE shows in a technical information piece that it can also be used to solve control issues relating to system operation, including the grid-friendly balancing of supply and demand. In addition, governments, companies and organizations can interact securely with each other on blockchain-based platforms and implement fully automated business models. VDE has now presented a standard for using blockchain technology for this purpose.

The following topics should now be addressed:

- **Power consumption:** cryptocurrencies often use energy-intensive technologies – even though there are better alternatives. Legislators should demand them.

- **Certification:** Reliability is essential for self-organization. Similar to banking apps, testing and certification should be mandatory.

- **Identification:** The European eIDAS Regulation provides a clear framework for electronic identification. It should also be applied to the self-organization of the energy industry.

Traditional electricity trading — **Electricty trading with blockchain**

Current ——→ Cash flow ——→

1. Electricity producers supply electricity consumers directly.
2. Each transaction is combined with other transactions to form a data block.
3. The transaction is checked and confirmed on decentralized computers.
4. The block is attached to the existing data chain (blockchain).
5. The electricity producer receives the payment.

One thing is clear: standards and automation algorithms are needed worldwide in order to organize the energy markets of the future – including across borders.
The standard developed by VDE is now being discussed in the international standardization committees. This leading position is invaluable for Germany and Europe.

VDE DKE technical information piece
Strengthen self-organization

Article from VDE Policy Brief 4/2023
Promoting flexibility now

Article from VDE Policy Brief 1/2023
Smart meters

Booster for Germany's companies

The digitalization of the German economy is faltering. This is particularly true for smaller companies, according to a recent study by the Federal Ministry for Economic Affairs and Climate Protection. Yet the economic benefits for Germany as an industrial nation are of paramount importance – see the example of SMART standards.

Standards are the basis on which industrial companies manufacture products. Standards also offer considerable advantages for companies and customers. They create comparability, stand for safety and quality, and ultimately strengthen Europe's technological sovereignty. However, companies also have to research the extensive standards catalogs and transfer a lot of information from the PDF files into their own software programs.

Employees must also assess which standards are really relevant and interpret any ambiguities in the standards. Errors in the transmission of information occur time and again and can affect the entire process chain.
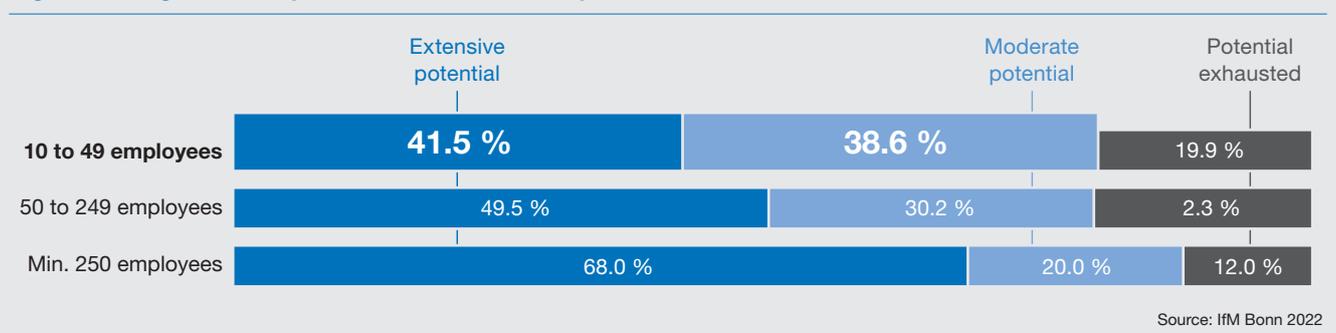
Machine-readable standards show the way

SMART standards provide a remedy and make information from norms and standards available in a machine-readable and machine-interpretable form. Employees can import them directly into their systems. At the same time, errors caused by copy-and-paste and misinterpretation are drastically reduced. A recent study by the Digital Standards Initiative (IDiS) – which is supported by the DKE, among others – underlines the enormous added value. Advantages of SMART standards using the example of product development in a medium-sized mechanical engineering company:

- **Increase in turnover: 32 to 60%**

- **Cost reduction where the standards are applied: 48 to 64%**

SMART standards pay off. They are a decisive competitive factor and driver of innovation. This applies not only to corporations, but also to small and medium-sized enterprises (SMEs) in particular. One problem: there are still too few investments in digital applications. Policymakers are called upon to offer companies investment-friendly framework conditions. It must also be made clear at the Digital Summit, which will take place on October 21 and 22 in Frankfurt: A strong, uniform digital infrastructure is essential to make SMEs fit for the future. The summit offers the ideal platform to discuss specific measures and solutions. This is the only way to ensure that smaller companies can also benefit from the advantages of digitalization and SMART standards.

Significant digitalization potential for smaller companies too

	Extensive potential	Moderate potential	Potential exhausted
10 to 49 employees	41.5 %	38.6 %	19.9 %
50 to 249 employees	49.5 %	30.2 %	2.3 %
Min. 250 employees	68.0 %	20.0 %	12.0 %

Source: IfM Bonn 2022

IDiS website
Digital Standards Initiative

IDiS white paper 3
Business benefits of SMART standards

Article from VDE Policy Brief 1/2023
Standardization as a geopolitical instrument

Article from VDE Policy Brief 1/2024
European harmonized standards

VDE – the technology organization

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Facts and figures

Founded:		**1893**
Employees:	worldwide	**2,000**
Members:	almost	**30,000**
Volunteer experts:	over	**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 certification mark:		**billions**
Norms and standards:	over	**3,500**