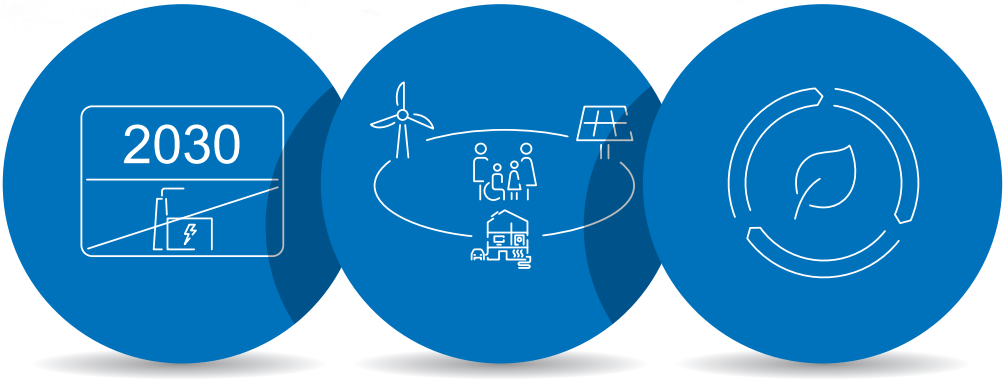
Creating a climate protection grid by 2030



Transform the energy system!

Bring the energy transition to the customer!

Operate the network sustainably!

VDE Policy Brief

Edition 2/2022

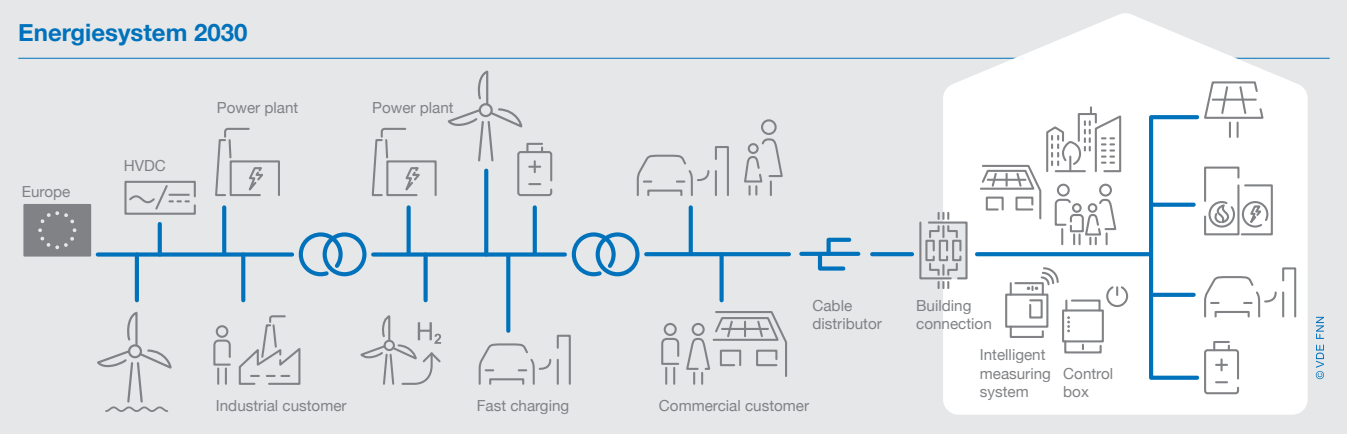
VDE Policy Brief online

VDE

Energy system 2030

Addressing three priorities for action now

Climate protection remains high on the German government's agenda. At the same time, it wants to increase energy security and reduce import dependence on Russia. The good news is that the stated goal of meeting 80 percent of gross electricity consumption from renewables by 2030 is paying dividends when it comes to both of these issues. The bad news is that the electricity system is not designed for this. Not yet that is!



Previously, a modest number of large power plants secured the power supply. As before, the 36,000 kilometers of transmission network and 1.7 million kilometers of distribution network are essentially designed for this purpose. In March 2022, the Netztechnik/Netzbetrieb im VDE (VDE FNN) forum – which brings together hundreds of network and plant operators, manufacturers and utilities, as well as public authorities and scientists – presented a roadmap for the path to a climate protection grid by 2030. In so doing, VDE FNN is a close partner of policymakers. Key action priorities include:

- **Transforming the system:** Renewable plants must be developed in such a way that together they can replace large-scale power plants in a stable manner. At the same time, intelligent control is needed because the system is significantly more complex. To this end, VDE FNN defines the technical requirements, optimizes the collaboration between network operators, and lays the foundations for secure operation, including digitalization and IT security. It also advises policymakers, especially when it comes to creating the framework for incentive systems and system services.
- **Engaging customers:** In the future, electricity must be used as flexibly as possible and in line with supply. Smart metering systems – especially on the customer side – are the prerequisite. VDE FNN ensures that the various modules work together optimally. Policymakers urgently need to create the appropriate regulatory framework to make participating in flexibility attractive for end customers.
- **Operating networks sustainably:** Some electricity networks have been in operation for over 40 years, making it all the more important to install climate-friendly and sustainable components. The current regulatory framework must be supplemented with appropriate criteria as well as support and funding. VDE FNN is driving forward digitalization and automation for sustainable operation and ensuring interoperability through standardized interfaces.

Website
VDE FNN

VDE FNN Roadmap
Climate protection network by 2030

Article from the Policy Brief, issue 3/2021
Overcome the energy revamp with AI

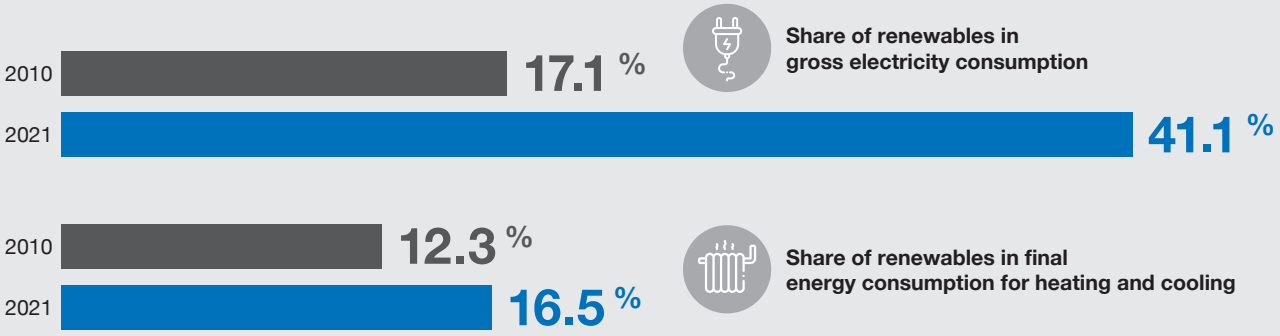
Sustainable thermal energy transition

Act now!

Germany wants greater energy security and to be among the pioneers in climate protection. Renewable energies are the key to this, also in the heating sector. However, the corresponding share has stagnated at around 15 percent – for a decade! Policymakers are urgently called upon to drive forward the sustainable thermal energy transition with the right framework conditions.

The electricity sector shows us how it's done

In the last decade, the share of renewables in electricity consumption has more than doubled.
The situation is different in the heating sector.



Source: AG Energiebilanzen

The thermal energy sector is responsible for more than half of Germany's final energy consumption. The leverage for climate protection is correspondingly large. Renewable energy can already be used directly in the thermal energy sector (power-to-heat, PtH), for example in heat pumps or, under certain conditions, in electric heating systems – efficiently, with low emissions and great flexibility. Green hydrogen is a viable alternative in the building sector only in a few applications due to efficiency losses in electrolysis and methanation as well as higher costs.

More green power for heat

The thermal energy transition is therefore failing not because of the technologies, but because of inadequate legal requirements. Together with Lower Saxony's Energy Research Center (EFZN), the VDE has summarized its political recommendations for action for more renewable heat in an impulse paper. Key statements:

- **Expand renewable forms of energy:** Renewable electricity generation must be significantly expanded to replace coal-fired electricity. The green electricity that is also available should be used within the context of sector coupling where the CO_2 savings effects are greatest – in transportation or in the electricity-heat sector.
- **Adapt electricity market design:** Heat generated from renewable electricity must not be more expensive than that generated using fossil fuels. For fair competitive conditions, the state-induced price components in the energy sector must be put to the test, and levies and surcharges for green electricity must be significantly reduced.
- **Set standards:** PV systems and heat pumps should become mandatory for new buildings. In existing buildings, conventional heating systems can be supplemented with cost-effective electric heating systems – also known as resistance heating. Prerequisite: Self-generated, surplus renewable electricity is used.
- **Establish the required legal conditions:** Today's separate energy systems for electricity, gas, heat and transport must grow together. It is also important to leverage the potential of energy-efficient renovation, neighborhood approaches, and district and waste heat. To achieve this, policymakers must set the right framework conditions.

Website
VDE ETG

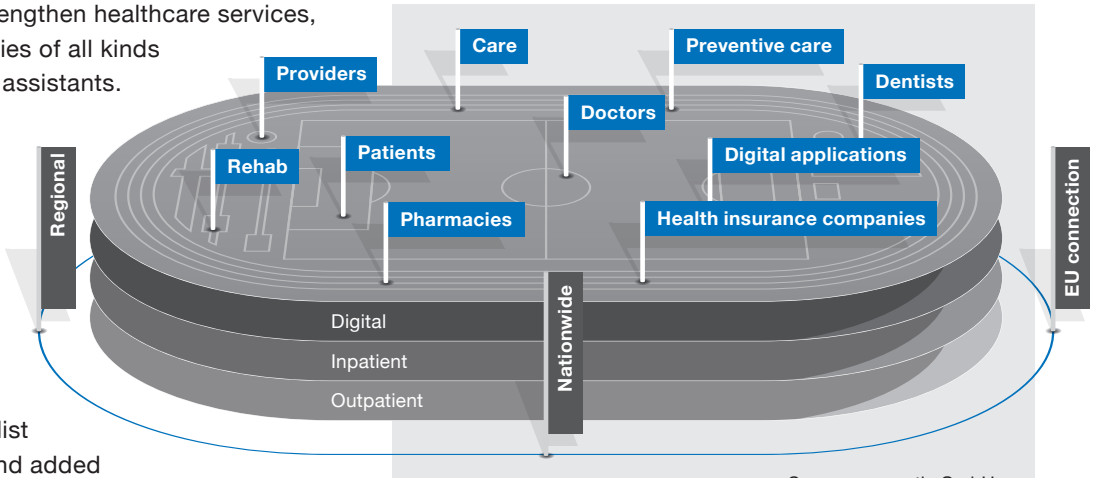
VDE Impulse
Embrace the sustainable thermal energy transition!

Healthcare system

Systematically building digital competence

The situation in the healthcare sector is more dramatic than ever. By 2030, Germany will be short of one million medical professionals. This makes it all the more important to remove bureaucracy from healthcare by means of digital applications while at the same time increasing the quality of care. VDE-certified job profiles lead the way.

In essence, the aim is to strengthen healthcare services, hospitals and medical facilities of all kinds through digitally competent assistants. To this end, the VDE has worked with stakeholders from all relevant healthcare sectors to develop advanced training regulations and corresponding certifications. The new job profiles are called digital technical assistants (DTAs) and digital-technical specialist assistants (DTFAs). Goals and added value:



Source: geomatic GmbH

- **Relieve the workload of specialist medical staff:** Medical professionals in Germany spend 55 million working hours on bureaucratic tasks each year. DTAs and DTFAs can significantly reduce this workload.
- **Exploit potential:** Issues such as patients' electronic files or the telematics infrastructure promise to improve quality and efficiency. Trained employees are required in order to ensure that the potential can be exploited.
- **Ensure data security:** Especially in the healthcare sector, the handling of personal data is a political issue. Trained and certified specialists can ensure data protection in a special way and thus pave the way for digital innovations.

Digital networking in the healthcare sector

In the course of digital networking, all major players in the healthcare sector can exchange information securely and in compliance with data protection laws – regionally, nationally and at EU level, as well as between the inpatient and outpatient sectors. The basis for this is the telematics infrastructure (TI) – which requires digital competence.

Policy: Strengthen new job profiles

Together with its partners, the VDE has thus taken the lead. Now, it is up to the politicians: A new healthcare concept must be developed at federal level to integrate and promote the new digital-technical job profiles. The federal government's qualification money should also be used to open up new opportunities in the growing healthcare market for people without job prospects – and to do something about the massive shortage of skilled workers.

VDE Position paper
Shaping digitalization in the healthcare sector

Website
VDE ITG

Website
VDE DGBMT

Made in Germany

How can we demonstrate quality in the digital world?

Made in Germany stands for the highest quality. However, the quality assurance processes that have evolved over decades are no longer effective in the digital transformation. Together with its partners, the VDE is showing how the German quality infrastructure (QI) can be further developed.

QI Digital: Promising quality with digital standards

Together with the top institutions of the quality infrastructure – the Federal Institute for Materials Research and Testing (BAM), the German Accreditation Body (DAkks), the German Institute for Standardization (DIN) and the Physikalisch-Technische Bundesanstalt (PTB) – the VDE-supported standards organization DKE is further developing German QI through the "QI Digital" initiative. It is supported by the German Federal Ministry of Economics and Climate Protection. The initiative brings together all stakeholders and pools expertise from industry, science and administration. QI Digital's projects include:

- **SMART Standards:** To date, standardization processes have produced hundreds if not thousands of sheets of paper – an anachronism in the digital world. The standard of the future must provide all requirements digitally and be interpretable for machines. DKE and DIN are working on joint interfaces in the initiative and are driving this core element forward in the European and international standardization bodies at CEN/CENELEC and ISO/IEC.
- **QI cloud:** Enormous volumes of data must be exchanged securely and in real time in the future. Certificates will have to be issued on this basis. The infrastructure required for this is to be set up by means of a QI cloud – which can also automatically check whether SMART standards are being met.
- **Pilot projects:** Real-life labs allow the potential of digital QI to be explored. Initial pilot projects with industry are testing 3D printed products, a hydrogen filling station and AI in medical technology. The project partners are evaluating the results – and developing solutions for digital-based QI.

Politicians are called upon to ensure market access for digital products and applications through modern and agile QI. Because only with digital quality infrastructure can essential European goals be achieved, from digital sovereignty to the Green Deal – safely and demonstrably.

QI Digital innovation ecosystem

Test environments

- Real-world test platforms with access for project partners and QI stakeholders
- IT and lab infrastructure
- QI data structure, infrastructure and interface development for QI Cloud

Transfer to application/economy

- Stakeholder and expert network
- Standardization and conformity assessment
- Capacity building through education and training

Research & development

- Identification of QI-related research requirements

Press Release
Green light for QI Digital

Website
VDE DKE

Website
QI Digital

VDE Renewables

Germany's service provider for renewables

The energy sector is in the midst of a transformation. With billions invested in renewable energy, it is crucial that the money is used reliably. VDE Renewables is a reliable and independent partner when it comes to consulting and quality assurance for companies.

Climate protection as a location factor

The energy transition offers great opportunities, especially for German companies. The GDP share of environmental technology and resource efficiency is already around 14 percent today, and it continues to rise. Key prerequisites for lasting success are innovative strength and the highest quality, guaranteed by standardization and certification.

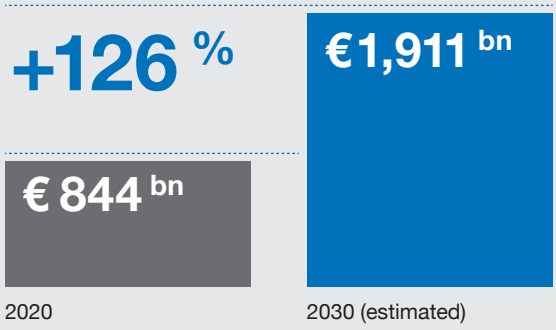
A key player in the energy transition

VDE Renewables is the independent quality guarantor in the field of renewable energies. It has unique expertise when it comes to innovations and industry standards – on a global scale, with the international VDE network comprising 2,000 employees in 60 countries. In addition, the VDE cooperates with leading research organizations such as the Fraunhofer Institutes and insurance groups such as Munich Re.
Project examples:

- **Erecting standardized PV power plants:** In 2016, BayWa r.e. became the first company in the solar sector to receive the VDE certificate for process and documentation standards for ground-mounted PV plants. This means that the world's leading supplier from Bavaria stands for safety, reliability and optimum performance – independently verified. Many other companies have followed suit and had their systems certified – as a benchmark for the highest quality standards.
- **Establishing decentralized energy generation:** Solar systems with storage and charging infrastructure are competitive today and an ideal solution for stable electricity prices and energy security. Many interesting roof and open spaces are excellently suited, but still unused – the VDE offers a unique platform for companies to receive neutral, competent and comprehensive support. Nevertheless, more solar, wind and biomass power poses new challenges for the energy industry in terms of network stability. Manufacturers and operators of renewable systems are responsible for ensuring that network access regulations are complied with. VDE Renewables checks the network conformity of generation plants and thus ensures safe operation. The issue is also continuing to gain momentum worldwide.
- **Driving the hydrogen economy:** Green hydrogen will form part of the global energy supply in the future. VDE Renewables offers technology pioneers along the value chain expertise from a single source. This is also a way of demonstrating state-of-the-art quality to investors and insurers.

Global market volume for environmentally friendly generation, distribution and storage of energy

According to an estimate by Roland Berger, the market for environmentally friendly generation, distribution and storage of energy will grow worldwide by 8.5 percent annually until 2030. The potential for German technology leaders is considerable.



Source: Roland Berger/GreenTech Atlas 2021

Website
VDE Renewables

VDE stands for consumer protection

The VDE guarantees the highest level of safety in all aspects of electricity – and has done so since 1893, making the VDE symbol synonymous with safety. Nevertheless, electricity-related accidents can occur. Until now, these have only been recorded in certain cases. The VDE is now bridging the gap with a reporting portal for private incidents. The findings contribute towards improved safety for consumers.

Insufficient knowledge about electricity accidents

Electricity remains dangerous even in the 21st century. This is all the more true, as we are surrounded by and interact with electrical devices like never before. However, while dangerous incidents as well as fatalities in the commercial environment are systematically recorded and analyzed by professional associations , incidents in leisure time or in private households remain unrecognized. Accordingly, there is a lack of data on unsafe electrical appliances. How many catch fire each year? How many defects have even led to electric shocks – and why?

The VDE Institute

The VDE was founded almost 130 years ago to protect consumers from the dangers associated with electricity. VDE standardization work has played a major role in steadily reducing the number of electrical accidents. Today, independent test engineers from the VDE Institute subject more than 100,000 devices to extensive product, quality and safety tests every year before they are awarded the proven VDE certification mark. Key figures:

Product types with VDE certification mark	200,000
Model variants with VDE certification mark	1,000,000
Devices tested per year	> 100,000
Production sites monitored	> 7,000
Countries with VDE collaboration agreements	> 50
Degree of awareness of VDE certification mark among German citizens	67%

Please report incidents!

www.vde.com/stromvorfall-melden

VDE reporting portal bridges the gap

The VDE now wants to shed light on this blind spot: On a new reporting portal, affected citizens can easily report their accident. Consumers are also called upon to inform the VDE in the event of suspicious appliances, for example if they smell something. VDE experts will call back if anything is unclear. The initiative is also very important because import bans on electrical appliances that have been proven to be defective are repeatedly circumvented by direct online imports. The findings are incorporated anonymously into the further development of safety standards and product testing – for maximum consumer protection.

Press Release
Report incidents with electricity

Website
VDE Institute

VDE – the technology organization

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Agency partner
Köster Kommunikation
GDE | Designing communication

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 VDE mark:	**Billions**
Norms and standards:	over **3,500**