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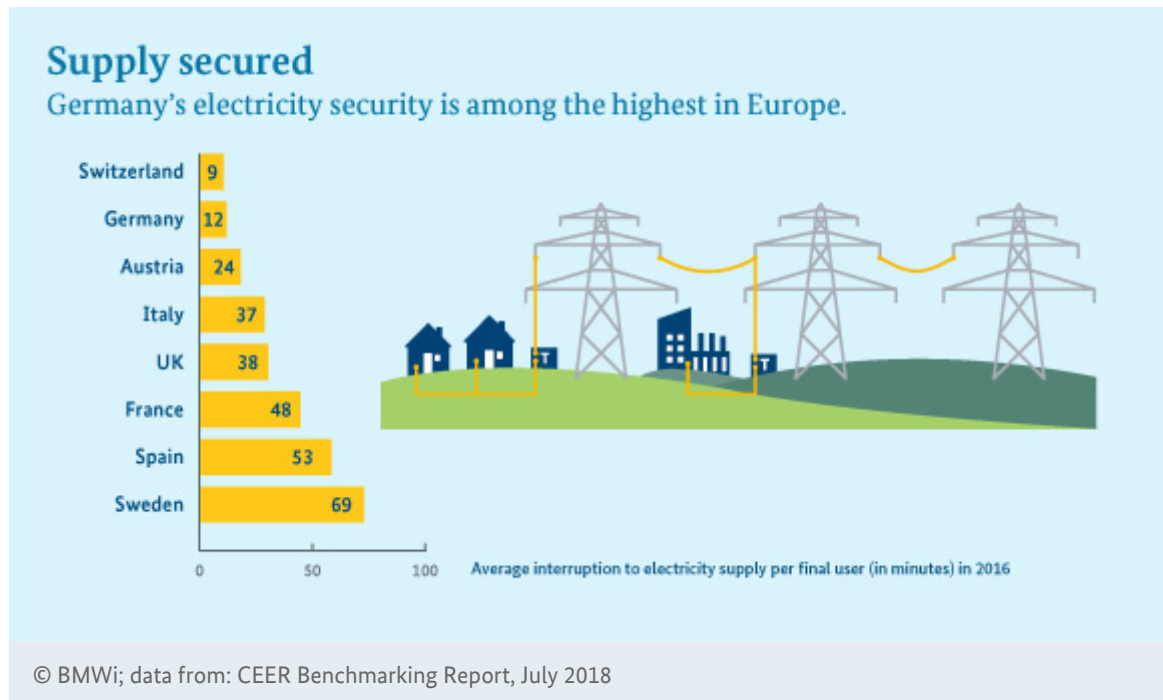
Berlin Energy Transition Dialogue sees great potential for renewables



Renewables are future-proof: according to a new study, the world's need for electricity could be met almost entirely by wind and solar energy by 2050. [Find out more](#)

Reliable electricity supply

Germany's electricity supply is particularly reliable, as a comparison with its European neighbours clearly shows. In 2016, German final electricity users experienced an average of no more than twelve minutes and eight seconds of interruption to their electricity supply. This puts Germany among the very best in Europe.



Italian users of electricity had to cope with an average of 37.11 minutes of power outage in 2016. UK users had to rely on torches for 38.39 minutes; French customers for 48.70 minutes. Spain (53.58 minutes) and Sweden (69.10 minutes) both had longer power outages than Germany. Average power outages per final electricity consumer lasted 24 minutes in Austria and only 9 minutes in Switzerland. This data is taken from the latest report published by the Council of European Energy Regulators (CEER) on electricity and gas security of supply, which was published in July 2018. All figures are based on data for 2016.

Bundesnetzagentur keeps records of power outages

Once a year, operators of energy-supply networks have to present a report to the Bundesnetzagentur detailing each and every disruption to the power supply that lasted longer than three minutes. The time, duration, extent and cause of these disruptions are all logged and listed in the report. For 2017, 862 network operators reported a combined total of 166,560 disruptions to the electricity supply. According to this data, the combined duration of power outages per final consumer in Germany rose to 15.14 minutes in 2017.

"Despite the fact that this represents an increase, the quality of Germany's electricity system remains at a very high level", explains Peter Franke, Vice-President of Bundesnetzagentur, citing weather events as the reason behind the greater disruption to the mid and low-voltage grids. "The energy

transition and the growing share of distributed energy generated are not having a negative effect on the quality of the electricity supply", said Mr Franke.

FURTHER INFORMATION

[↔ 2016 CEER Benchmarking Report on the Continuity of Electricity and Gas Supply](#)

Let's be good neighbours

Germany wants to engage in dialogue with its neighbours and closely coordinate its efforts to phase out of coal-fired power. The 'electricity neighbours' convened in Berlin to discuss the recommendations presented by the German Commission on Coal.



In many ways, the meeting of the electricity neighbours was like a typical conversation between neighbours: it was about leaning over the hedge, talking to one another and preventing misunderstandings before they arise. If you feel respected and taken seriously by your neighbours, you will worry less about the future and recognise joint opportunities more easily.

Germany, which plays a key role for the European electricity market, has decided to phase out coal. What does this mean for its electricity supply? How can affordability and security be ensured? That's something Germany's neighbours would like to know.

"Today, a very important political signal has been sent", Federal Minister for Economic Affairs and Energy Peter Altmaier said at the meeting of the electricity neighbours in April. "Germany is phasing out coal, but we are not doing this unilaterally, we are closely coordinating with our neighbours. And we are in good company: nine out of our eleven electricity neighbours also want to phase out of coal-

fired power or have done so already. That makes it all the more important to discuss in detail the consequences of these efforts so as to ensure that our electricity supply continues to be affordable and secure."

Germany's phase out of coal-fired power and the phase-out-plans that have been announced by other EU Member States mean that two-thirds of all coal-fired power plants will soon leave the market.

A common safety net to prevent bottlenecks

Addressing the energy ministers of Germany's neighbouring countries, Minister Altmaier set out the details of the recommendations on the phase out of coal-fired power that have been presented by the [Commission on Growth, Structural Change and Employment](#). The energy ministers were particularly interested in the subject of energy security. Minister Altmaier underlined the role played by synergies in the European Single Market. With markets becoming increasingly interconnected and the possibility to balance electricity supply across regions, the combined capacity needed will be less compared with the capacity that would be needed if each country tried to deliver its own peak load. Peak load is the load placed on the grid at the time of the highest demand for electrical power. The more interconnected our markets become and the larger the interconnected regions, the more powerful the synergies will be, said Minister Altmaier. So exchanging electricity between neighbours, including at times when electricity is scarce, is a good example for neighbours helping each other out.

The group of 'electricity neighbours' was set up to give neighbouring countries the opportunity to engage in high-level regular dialogue with one another and discuss national measures. The group includes all of Germany's neighbours plus Norway and Sweden, which are connected to Germany via undersea cables. The European Commission also attends the meetings on a regular basis. The conference was the first of what will be a series of talks.

FURTHER INFORMATION

- [\[→ Commission of Coal recommends phasing out of coal-fired power by 2038.](#)
 - [\[→ Final report by the Commission \(in German only\)](#)
 - [\[→ Conventional Energy Sources](#)
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What exactly is a smart grid?

Smart grids are considered a key requirement for the transition to renewables. But what exactly is a smart grid? What does it do? And what do smart grids and modern teaching methods have in common? You'll find answers here.



Smart grids use modern communication technology to combine different elements of the energy system, such as generation and demand, thus ensuring a balance between both sides. They help feed renewable energy into the grid more easily and allow for the grid's capacity to be optimally used.

Traditionally, teachers have been passing on their knowledge to pupils, and not the other way round. And similarly, only a small number of power plants has been used to supply energy to a large number of consumers. However, traditional teaching methods have long become obsolete. There is trend towards joint learning and dialogue in the classroom. Pupils team up in working groups, organise their own learning, convey and absorb knowledge and pass it on themselves. Similarly, smart grids change the way households and companies interact. Households that put photovoltaic installations on their roofs are no longer mere consumers of electricity. They are also producing their own energy, thus becoming prosumers. With the number of prosumers rising, more coordination is needed to deliver a smooth energy supply.

Conventional grids not designed to accommodate renewables

Today's grids are designed to handle a steady and even flow of energy. This has been sufficient to handle the constant and predictable flow of electricity generated by coal-fired and nuclear power plants. Bottlenecks occurred only very rarely. However, with electricity generation becoming ever more distributed and volatile, this could soon change and create new challenges for today's conventional grids. How much solar and wind power is generated depends on external factors, not actual electricity demand. This means that if supply exceeds demand, the grid won't be able to cope.

Going forward, we will also see changes in demand patterns. There could be new peaks in demand, for example in early evenings, when everybody wants to charge their electric car.

So smart

This is where smart grids come in. They can help store excess electricity in electric cars and private storage units until there's demand for it.

In order for smart grids to be able to ensure communication between all energy generation facilities and users, data needs to flow in both directions. Smart grids are therefore often called the internet of energy.

To be able to fulfil this role, smart grids require both power lines and wires.

Smart meters

Smart meters are the core element of a smart grid. They ensure that consumers, grids and utilities are linked up in a way that is particularly secure. Smart meters determine how much electricity is used, encrypt this information, and send it to the utility who calculates the price. Customers have full transparency of their electricity consumption. Grid operators obtain important information about the situation on the ground, helping them to better control the grid. Smart meters need to comply with strict data protection rules. In addition, the Federal Office for Information Security carries out extensive cybersecurity checks that need to be passed before a smart meter can be used. The security standards that need to be met can be compared to those applicable to banks.

More than a meter

Smart meters are the backbone of a smart grid. They form digital infrastructure designed to drive forward the energy transition in all areas. The energy transition is not only about green electricity, it is also about switching to renewable heat and a more sustainable transport system. Smart metering technology – which is particularly secure – can also be used to transmit data related to the charging of electric vehicles or to the smart control units of heating systems in buildings (smart home, smart building).

Smart energy showcases

Germany has selected five model regions in which the regulatory environment, the opportunities and the requirements for smart grids are being tested. In January 2017, the "Smart Energy Showcases – Digital Agenda for the Energy Transition" Funding Programme (SINTEG) was launched. The idea is to develop and test solutions for a secure, affordable and environmentally-friendly energy supply across five large model regions – an energy supply characterised by large amounts of fluctuating renewable energy from wind and solar.

FURTHER INFORMATION

[\[→ BMWi article "Smart grids"\]](#)

[\[→ Grids and grid expansion\]](#)

Quote of the week



"Economic growth and our energy supply need to be sustainable to be ensured in the long term. Our citizens dream of happiness, of leading lives marked both by prosperity and respect for our planet's resources, and we are convinced that we must not destroy their dream."

Minister Altmaier at the Berlin Energy Transition Dialogue (BETD), speaking about the importance of the global energy transition.

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