



Greenhouse gas emissions are plummeting?

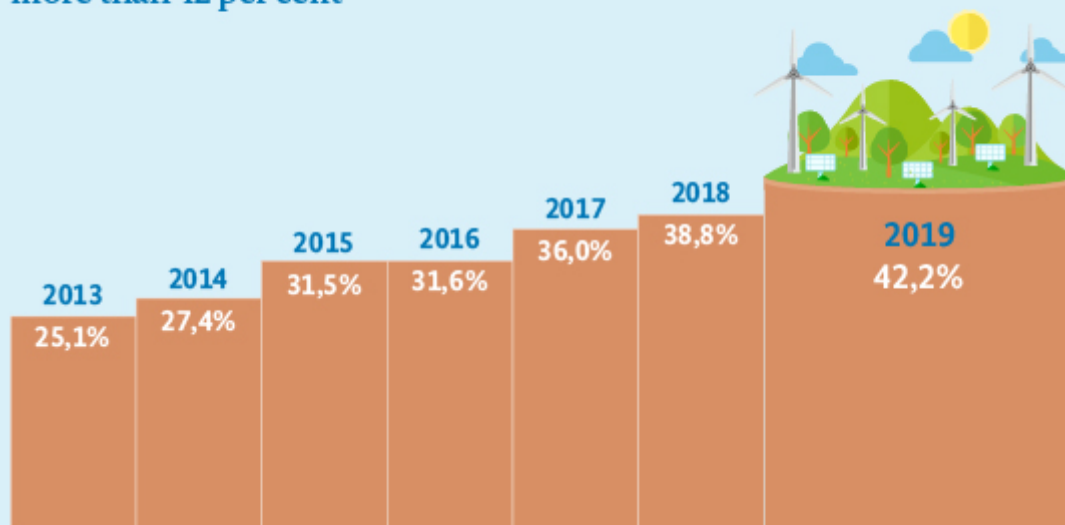
2020 will be good for energy and the climate - as the energy transition takes up speed, energy-related CO₂ emissions in Germany are falling. [Find out more](#)



Renewable energy levels reach record high

According to figures provided by the Working Group on Energy Balances, more than 42 per cent of Germany's electricity came from renewables in 2019.

Share of renewables in electricity consumption reaches more than 42 per cent



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In 2019, the share of electricity that came from renewables was higher than ever before, accounting for around 42 per cent of Germany's gross electricity consumption. Just to put this figure into perspective: Back in 2013, renewables contributed around 25 per cent. Since then, their share has continued to grow.

At the same time, conventional sources of energy continue to lose in importance. This is particularly evident in the share of conventional energy commodities in electricity generation. The share of electricity from hard coal in the electricity mix fell to 9.3 per cent. This was particularly due to rising prices for CO₂ allowances and lower prices for purchasing gas.

The share of electricity from lignite in the electricity mix also shrank, falling from 22.6 per cent in 2018 to now 18.6 per cent. This development was spurred on by higher allowance prices and the expansion of renewable energy. The last time Germany generated as little lignite-fired electricity as last year was back in 1970. And conventional power as a whole fell to its lowest level since 1990, the year records for reunified Germany began. Wind and solar power are seeing the opposite trend. At 173.1 terawatt-hours, electricity from these sources combined for the first time overtook coal (at 170.9 terrawatt-hours).

Nuclear power saw a slight decline (minus 0.8 terrawatt-hours). Its share in electricity consumption was 12.3 per cent in 2019. With the Philippsburg 2 nuclear power station having been taken off the grid at the end of 2019, the share of coal-fired power is expected to be even lower in 2020. The figures provided here are based on estimates provided by the Working Group on Energy Balances.

The future of energy put to a practical test

The first regulatory sandbox for the energy transition – SmartQuart – has been established. It focuses on testing innovative solutions that will shape the future of our energy supply. The solutions are ultimately to be rolled out to other German regions.



What new ways of generating energy will we discover and how can we use energy in a smart manner? What will urban life and life in rural areas look like in a future where 100 per cent of our electricity and heat comes from renewable sources? And how can we ensure that our energy supply remains stable despite fluctuating amounts of wind and solar energy being fed into the grid? The [regulatory sandboxes](#) for the energy transition programme will be an opportunity to find answers and develop solutions to these and many other questions. By adopting this programme, the Federal Ministry for Economic Affairs and Energy is seeking to reduce the time required to move innovations from the lab to the market. In order for Germany to reach its ambitious climate change mitigation targets, the share of renewable energy needs to be considerably expanded. This is what the SmartQuart projects seeks to achieve, by involving citizens, local planners, utilities, municipalities in the implementation of the transition in the energy and heat sector. SmartQuart is the first of a whole series of regulatory sandboxes that look at testing ideas in practice. In July 2019, Federal Minister for Economic Affairs and Energy Peter Altmaier announced the winners of a call looking for ideas for regulatory sandboxes for the energy transition.

Testing ideas under real-life conditions

'I am delighted that the first regulatory sandbox for the energy transition has now started its work. These sandboxes are innovation projects that are tested at an industrial scale. We are developing and testing technologies that can make a contribution to meeting our ambitious energy and climate change mitigation targets. The sandboxes for the energy transition programme allows for these technologies to be tested under real-life conditions and at an industrial scale', Minister Altmaier said as he handed over the notice approving funding for SmartQuart in December 2019.

Making fossil fuels obsolete

The sandbox looks at the future of energy in urban neighbourhoods and rural areas. One of its goals is to replace fossil fuels such as coal with renewable energies. A mix of information and communications technologies and smart grids allows for different installations to be combined and therefore for the grid to be controlled in a smart manner. For example, this allows for the heat, electricity and mobility sectors to be linked up across three sites in North Rhine-Westphalia and Rhineland-Palatinate.

A hydrogen-based rural micro-grid

The rural municipality of Kaisersesch is planning to build a hydrogen-based micro-grid (a small-scale smart grid). In cases where wind turbines and solar PV installations provide more electricity than can be used, hydrogen is produced as a storage medium. The Kaisersesch region is testing the entire hydrogen value chain from generation, conversion, storage and distribution all the way to consumption.

The energy transition in urban space

The 'Literaturquartier' (which literally translates as 'literature quarter') in the German city of Essen once housed the offices of the German newspaper 'Westdeutsche Allgemeine Zeitung'. It has now been turned into a place where innovative energy technologies for use in densely populated areas are being tested. The neighbourhood, which consists of residential areas, small shops, offices and hotels,

seeks to cover a good share of its electricity demand by using a solar PV and hybrid solar system. The system also includes a neighbourhood-owned large energy storage unit and a smart digital energy management system. Charging stations, electric ride sharing and bike sharing services are provided to supplement existing mobility options. This is to help optimise energy generation and consumption at the local level.

Making optimal use of energy by transferring it between neighbourhoods

The key focus of this project is to enable neighbourhoods to transfer energy within and between neighbourhoods, meaning that neighbourhoods with entirely different needs could help one another out on sustainability and economic efficiency. Rural and sparsely populated areas have very different requirements towards their energy supply than inner cities counting large numbers of consumers. At the same time, they also have very different options to generate electricity. Across all three SmartQuart neighbourhoods, residents, utilities and local technology providers are helping implement the regulatory sandbox. Ultimately, the knowledge generated as a result of this project is to serve as a blueprint for other residential and urban neighbourhoods across Germany.

More sandboxes to be launched this year

In 2020, several new regulatory sandboxes are to be launched. These laboratories in which the future of energy is being explored are spread all across Germany, including in regions affected by structural change such as former coal-mining areas. The new feature is that many innovative technologies and procedures – such as the manufacture of hydrogen – are for the first time being tested under real-life conditions and at industrial scale. The sandboxes look at a number of different issues: How can large quantities of hydrogen be produced using green electricity and stored at an affordable price? How can businesses and private households be linked up and what is the best way to supply these with electricity and heat. And: How can existing infrastructure be put to work for the energy transition?

The regulatory sandboxes for the energy transition form part of the Federal Government's [7th Energy Research programme](#). Under this programme, funding is provided to businesses and research institutes that develop new technologies and solutions for the energy transition.

What exactly is the North Seas Energy Cooperation?

Like a good network engineer, the North Seas Energy Cooperation ensures that the cables are all in the right place. In addition, it not only helps save costs but also our climate. Let's get on board for a tour of the North Sea!



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This is what it's all about: more and more wind power generated offshore is reaching to the shores of the North Sea. An alliance of 10 countries seeking to use this power has formed – they want to work together on the construction of wind farms and offshore grids.

The North Sea is not all waves, wind and open sea. It is also characterised by its many offshore wind farms. In a time where onshore wind energy is facing ever growing problems, offshore wind can make an important contribution to meeting our climate change mitigation targets and bring about an environmentally-friendly, reliable and forward-looking energy supply. The European Commission has stated that 230 to 450 gigawatts in installed offshore wind capacity are needed in order to meet the union's target of carbon neutrality. However, this target will be difficult to achieve without international networking.

Germany will play a key role in Europe's energy policy in 2020

This is where Germany comes in. When Germany takes over the presidency of the EU Council at the beginning of July this year, it will have a key role in shaping the EU's energy policy. One of its most important missions will be to pave the way for implementing the European Commission's Green Deal – a plan under which the EU seeks to achieve carbon neutrality.

This January, Germany took over the presidency of the North Seas Energy Cooperation from Denmark and wants to use the synergies opening up as a result. The North Seas Energy Cooperation is a cross-border cooperation project between ten European countries (Belgium, Denmark, France, Germany, Ireland, Luxembourg, the Netherlands, Norway, Sweden, and the United Kingdom) and the European Commission to expand offshore wind energy and offshore grid infrastructure.

Tidying up cables in the North Sea

The countries seek to better coordinate the expansion of offshore wind energy across borders and link offshore wind power generation with the cross-border electricity trade. How can this be achieved? One option would be to connect new offshore wind farms to existing cross-national power lines, another, to link up different wind farms within a given country via an additional line, thus reducing the need for expensive additional cables. This would help bring some order into the cabling and reduce total costs. It would also mean improving utilisation of the cables and security of supply in the participating countries – which would be supplied with wind power even at times when there's no wind to turn the blades of their own turbines.

However, managing such a complex grid in the North Sea requires highly skilled 'network engineers', a joint funding framework for wind energy across the participating countries and a common set of grid connection rules – for example in cases where new wind farms are used by several countries.

This is why Germany intends to draw up a set of priorities for developing a regulatory framework for joint offshore wind projects at EU level during its presidency of the EU. Such a framework could, for example, set out rules for how the costs and profits of joint projects are to be distributed between the participating countries and how the planning of offshore wind farms and grid expansion could be better coordinated.

Using artificial islands as electricity transport hubs

Germany seeks to use its presidency of the EU to also develop and move forward joint offshore wind energy projects in the North Sea such as transmission system operator Tennet's North Sea Wind Power Hubs. This project seeks to create artificial islands on which up to 15,000 megawatts (MW) of wind capacity are to be installed. If these islands were to be connected to several countries, they could serve as hubs for importing and exporting wind power.

FURTHER INFORMATION

[\[→ Press release by the Federal Ministry for Economic Affairs and Energy: Minister Altmaier said: The energy transition is a strategy for modernising Europe](#)

Providing more charging stations for electric cars

Nobody will buy an electric car if there is no infrastructure to charge it. This is why Germany is seeking to provide one million public charging stations by 2030.

The government's Charging Infrastructure Master Plan explains how the goal of providing electric mobility for everyone can be reached.



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The Charging Infrastructure Master Plan, which was adopted by the Federal Cabinet at the end of 2019, sets out a large number of measures for creating a user-friendly charging infrastructure across Germany for up to ten million electric cars. Now that the details of the plan have been worked out, implementation can begin.

'Our goal is to ensure that nobody in Germany will tell us that they won't buy an electric car because they don't know how or where to charge it,' Federal Minister for Economic Affairs and Energy Peter Altmaier said on the subject of charging infrastructure expansion at a meeting with energy companies in December 2019 hosted by both him and Federal Minister for Transport Andreas Scheuer. He continued by saying that in order to reach this goal, the Federal Government, carmakers and energy companies all needed to continue to pull in the same direction. 'If we don't have enough charging stations and if we don't have enough renewable electricity, sustainable electric mobility will simply be impossible. We need to expand our charging infrastructure and we need to integrate it into our grid.'

The key points of the Charging Infrastructure Master Plan

By 2030, all Germans are to be able to quickly find an easy-to-use charging station where they can recharge their car for the next trip. The idea is to assure those interested in buying an electric car that they will be able to find a charging station for their vehicle close by.

Germany currently has 23,840 public charging stations – 12 per cent of which are rapid chargers. Germany seeks to expand its number of charging stations, also with a view to meeting its climate change mitigation targets in the transport sector. The Climate Action Plan envisages cutting hazardous greenhouse gas emissions in the transport sector by 40 per cent by 2030. In order to reach this goal, 50,000 additional public charging stations are to be installed in the next two years under the Charging Infrastructure Master Plan. The automotive industry has stated that they will add 15,000

public charging stations by 2022. In addition, funding worth 50 million euros will be available in 2020 under a new programme to encourage the equipping of private parking bays with chargers.

The government also wants to provide more funding for creating charging stations in shopping mall car parks, so cars can be charged while people shop. Automotive companies are seeking to create an additional 100,000 charging stations on their premises and those of their car dealers. The energy industry also wants to contribute – with up to 4,000 rapid chargers in the making.

Controlling the charging process in a smart manner in order to prevent bottlenecks in the grid

Germany's focus in electric mobility is on controlling the charging process in a smart manner, thus preventing bottlenecks in the grid. Network operators are to be provided as soon as possible with all the information they need to expand the grid in a forward-looking manner. They are also to be enabled to control the charging process of electric vehicles in a smart manner.

The Federal Ministry for Economic Affairs and Energy and the Bundesnetzagentur (the German regulatory office for electricity, gas, telecommunications, post and railway markets) and the network operators are seeking to present a proposal by this March that will encourage a forward-looking expansion of the grids. In order to speed up the creation of charging infrastructure, energy companies are asking for less time-consuming approval and grid-connection procedures. The National Charging Infrastructure Coordination Office was already set up last year. The Master Plan is to be reviewed every three years.

FURTHER INFORMATION

[↪ Electric Mobility](#)

Quote of the week



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'The figures are proof that the climate change mitigation policies we adopted in the last few years have been effective. CO₂ emissions are falling quickly, coal-fired power is being replaced by renewables. Since 2005, our economy has grown by around 25 per cent – with CO₂ emissions falling

by 13 per cent over the same period. This is an important signal showing that climate change mitigation and competitiveness can go hand in hand'.

Peter Altmaier, Federal Minister for Economic Affairs and Energy, on the considerable decrease in CO₂ emissions registered in the last few years.

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