



## What 'Fit for 55' will do for climate action

By 2030, the goal is to reduce greenhouse gas emissions by 55% compared to 1990 levels – with the help of a comprehensive package of measures. [Find out more](#)



# How to make sustainable and energy-efficient manufacturing work

The ETA transfer project has been taking the latest discoveries of energy efficiency research to the factories of manufacturing companies – the places where they can make a real difference. The project will come to an end in 2021. Time for some stocktaking.



Cutting, cleaning, hardening – these are some of the manufacturing processes a prospective hydraulics part, for instance, must go through before it can be used. Often it is possible to link up several of these steps in a way that conserves energy. The Stuttgart-based industrial company Bosch Rexroth, for instance, has been able to lower the energy consumption of cleaning facilities by up to 95% by using waste heat from the hardening process. Under the ETA transfer research projects, this type of reduction potential was studied in cooperation with eight more partner companies and – wherever possible – harnessed in the manufacturing process. Many of the industrial companies involved were able to bring down their energy consumption by similar rates to those achieved by Bosch Rexroth.

The project emerged from its predecessor, the [ETA factory \(in German only\)](#), which was led by the Institute of Production Management, Technology and machine Tools (PTW) at Darmstadt University of Technology. The key to the high efficiency gains realised under the project can be found in its holistic approach to energy exchange between different machines and the factory building

## Germany's carbon footprint: major potential for improvement in the industrial sector

This is a highly valuable success considering that the German industrial sector accounts not only for a fifth of the country's GDP, but also a fifth of its greenhouse gas emissions. This means that there is

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major potential for better energy efficiency in industrial manufacturing – and for more effective climate action. The research project ‘ETA factory’ was able to demonstrate how exactly this potential can be harnessed.

The follow-on project on ETA transfer has now translated these results into practice. The nine partner companies involved, all working in mechanical engineering and the vehicles industry, tested out in practice how they can lower their energy costs and make better use of existing resources. The objective here is to reduce carbon dioxide emissions and work towards in-house climate targets.

### **Partner companies have cut their emissions by an annual 1,400 tonnes**

According to those in charge of the project within the partner companies, these have so far been able to reduce their carbon emissions by more than 1,400 tonnes a year, with some partner companies already beginning a rollout of measures beyond the scope of the project. The systemic approach underpinning the project should help prevent any misguided investment decisions, e.g. in overly large installations. It is true that many individual measures are already commonly known in the industrial sector, but others require specialist expertise – including those exploiting links between manufacturing equipment and building technology which have been developed by the ETA transfer project team and the technology partners involved.

What is also important to note is the piloting character of the project, which makes it easy to bring measures to other sites and areas of manufacturing. The [abstracts](#) (in German only) and [video tutorials](#) (in German only) that can be accessed on the project’s website can help with the transition to other companies.

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#### FURTHER INFORMATION

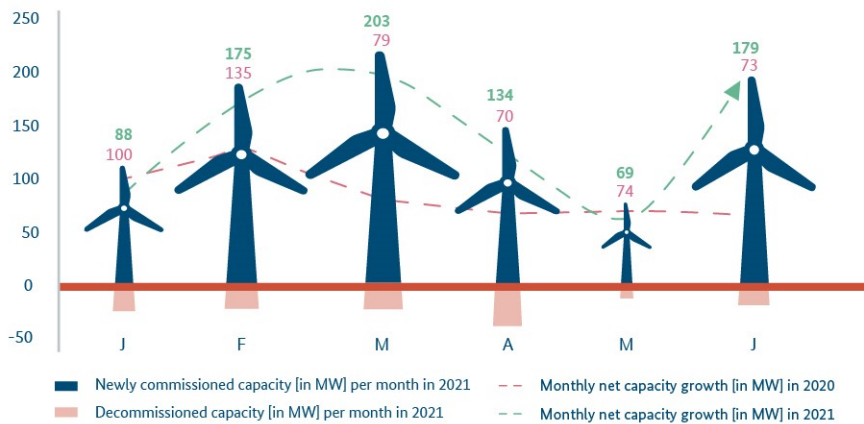
- [\[→ Project abstracts for ETA transfer \(in German only\)\]](#)
  - [\[→ Video tutorials on ETA transfer \(in German only\)\]](#)
  - [\[→ General information on ETA transfer \(in German only\)\]](#)
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# Onshore wind power gaining traction: total capacity increases

Over the first six months of 2021, the expansion of onshore wind power capacity has accelerated compared to the same period the year before. This is a trend that had already begun in 2020.

## Positive trend for onshore wind power

Average net capacity growth in 1st semester of 2021 has grown year on year



Net capacity growth for onshore wind power in 1st semester of 2021

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They are our hope for a sustainable and climate-friendly energy supply and also Germany's most-used renewables: wind and solar power have already become an indispensable part of the [electricity mix](#). The expansion of wind and solar power is therefore recognised as a criterion for a successful [energy transition](#). But what is the latest news about onshore wind power, which – unlike its offshore counterpart – is often harnessed in populated areas? The latest figures from 2021 make those rotor blades seem to be going round even faster.

## High levels of new capacity added in the first half of 2021

In the first four months of 2021, Germany added 700 megawatts (MW) of capacity (gross figure), a figure that approximately corresponds to a 60% increase compared to the same period in the preceding year (430 MW). In terms of net figures (newly commissioned capacity per month, minus decommissioned old installations), Germany exceeded the necessary average expansion figures in four out of six months in the first semester of 2021. The net figure for June 2021, for example, is 179 MW.

A positive trend for onshore wind energy had already been perceptible in 2020, when the gross figure for added capacity was 1,385 MW compared to 1,078 MW in the preceding year, which is a 44% increase. Germany's installed capacity in terms of onshore wind-powered installations stood at 54,4 GW in 2020, accounting for 23.7% of the country's gross electricity consumption.

## Action to further increase onshore wind power capacity

Important measures to strengthen the use of onshore wind energy were already taken back in 2020. The 2021 Renewable Energy Sources Act stipulates a new clause on the financial involvement of municipalities along with new, ambitious expansion targets combined with the corresponding auction volumes. Measures to ensure better compatibility, e.g. with civil aviation navigation systems, were also taken.

Under the Investment Acceleration Act, the course of legal action in cases of lawsuits being brought against approvals under immission control law was streamlined and the possibilities to cause delays by filing lawsuits and complaints against such approvals restricted. The Federal Immission Control Act was amended to accommodate [re-powering projects](#) for onshore wind installations. All this is to ensure that, in line with the [2021 Renewable Energy Sources Act](#), 71 GW of installed capacity will be available by 2030.

Beyond new capacity, the measures that have been implemented and initiated are also to result in more projects being approved and in tougher competition in the auctions. Between January and December 2020, new approvals for almost 3,300 MW were issued – representing an increase of 70% year on year.

## Night-lighting, new navigation solutions, biodiversity portal

A new, needs-based night-lighting solution is in place for existing and new wind farms. Operators have until 2022 to make the necessary changes. Red lamps will only be able to flash when an aircraft is approaching. The 2021 Renewable Energy Sources Act also stipulates that the municipalities can benefit financially from the expansion of wind energy. Operators of wind-powered installations are free to pay a share of the revenue from the electricity generation to municipalities located in a 2.5 km periphery of a given installation.

The Federal Ministry for Economic Affairs and Energy also supports the [replacement of radio navigation equipment](#) with models that are less affected by wind-powered installations. Over the coming years, the switchover to satellite-based navigation systems and the use of new technology to calculate disruptions within radio navigation equipment could result in additional land becoming available for the expansion of onshore wind-powered capacity.

In 2020, the conference of ministers of the environment took a number of decisions that will make it easier for planners of new wind-powered installations to comply with the rules to protect biodiversity. For the time being, however, these remain one of the largest obstacles to a swift expansion of wind power.

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### FURTHER INFORMATION

[\[→ Press release by the Federal Ministry for Economic Affairs and Energy: ‘New potential space for expanding onshore wind capacity’](#)

[\[→ Press release by the Federal Ministry for Economic Affairs and Energy: ‘Economic Affairs Ministry presents work plan to strengthen onshore wind energy’](#)

[\[→ Information about renewable energy](#)

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# New expert opinion looks at whether Europe's energy supply will remain secure up to 2030

More renewables instead of conventional energy sources, an increasingly European electricity market and the phase-out of both nuclear energy and coal-fired power in Germany – a new expert opinion examines whether the new electricity mix can cover the electricity demand up to 2030.



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Germany is overhauling its energy supply, moving away from nuclear and fossil fuels and towards renewable energy, greater energy efficiency and the use of electricity for transport and heating. But will the electricity supply remain stable during this transformation? Compared to other countries, Germany's electricity supply is very reliable and secure. In order to make sure that this continues to be the case, the [security of supply](#) on the electricity market is continuously monitored – particularly against the background of the [phase-out of nuclear energy and coal-fired power generation](#) taking place in parallel.

## Resource adequacy – Will Europe's electricity supply remain secure up to 2030?

Apart from examining network and systems security – i.e. the secure operation of the grids – 'resource adequacy' is also being taken into account. A new study commissioned by the Federal Ministry for Economic Affairs and Energy has developed a number of different future scenarios to determine whether the supply of electricity on the European electricity markets will be sufficient to meet the demand at all times.

Based on the simulations used, the experts conclude that, for Germany, supply will be able to match demand for all the scenarios that have been examined up to 2030. This also applies for scenarios which project more ambitious climate action compared with the baseline scenario, including higher carbon prices and greater electricity consumption. The expert opinion modelled the effect of the

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mechanisms on the electricity markets up to 2030 and beyond. A document containing explanatory notes for the expert opinion can be found [here](#).

## **Tighter climate targets – What will be the level of electricity consumption by 2030?**

The tightened EU climate targets and the adjusted Federal Climate Change Act will also have a direct impact on electricity demand up to 2030. The Federal Ministry for Economic Affairs and Energy has therefore commissioned a recalculation of electricity consumption in 2030 based on the adoption of the amended Federal Climate Change Act by the Bundestag and Bundesrat. The detailed analysis is to be available in autumn 2021. According to Initial estimates, electricity consumption will be between 645 and 665 TWh for the year 2030. The mean value of the forecast is 655 TWh and thus only slightly above the maximum value determined by the expert opinion.

“[Monitoring resource adequacy on the European electricity markets](#)“ will be the last project report on resource adequacy by the Federal Ministry for Economic Affairs and Energy. At the beginning of 2021, the responsibility for monitoring security of supply was handed over to the Bundesnetzagentur. The next monitoring report on security of supply, which will be published by the Bundesnetzagentur by the end of October, will include, but not be limited to, resource adequacy.

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### FURTHER INFORMATION

[\[→ Publication by the Federal Ministry for Economic Affairs and Energy: Monitoring resource adequacy on the European electricity markets’ \(project report\)](#)

[\[→ Article by the Federal Ministry for Economic Affairs and Energy: ‘What exactly is security of supply?’](#)

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# What exactly is repowering?

**Generating more environmentally friendly electricity with fewer wind turbines, minimising the impact on the environment – Repowering could be another key ingredient in the further expansion of wind energy and it could also become easier to use.**



**The key mission: to replace older wind turbines with more efficient and powerful models on existing wind farm sites**

Germany's first wind turbines were installed in the 1990s and have been generating electricity ever since. They have received government funding for at least 20 years. This year, the first of these older installations will see the funding they have received under the [Renewable Energy Sources Act](#) discontinued. According to the Renewable Energy Sources Act Progress Report, almost 15 gigawatts (GW) of wind capacity will be affected by this up to 2025, and almost 24 GW by 2030. So what does this mean for the energy transition? Will all these turbines be dismantled, will they go on operating, or will they be replaced by new turbines? The answer is that majority of the old wind turbines is likely to continue operating, as the sale of wind power no longer requires the funding provided under the Renewable Energy Sources Act in order to be profitable. Nevertheless, older installations will at some point reach their expected lifespan.

This opens up new opportunities for the energy transition as, in accordance with the 2021 version of the [Renewable Energy Sources Act](#) (EEG 2021), Germany's installed wind capacity is to be increased from 53 GW in 2019 to 71 GW in 2030. In order to ensure the implementation of the [Green Deal](#) – which is to turn Europe into the world's first climate-neutral continent – this capacity will actually need to be expanded even further. Many believe that repowering could be the solution to this problem. But what exactly is repowering?

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## 'Tuning' wind farms

'Repowering' simply means the upgrading of existing power plants or installations. The idea is to replace older turbines or parts of these with modern ones that are more powerful. In principle, this can be done with any type of power plant or installation. Wind power, however, is a technology that is particularly well-suited to repowering. Instead of tuning just one single, older wind turbine, an entire wind farm with a large number of older turbines is dismantled and replaced with more efficient and powerful installations. This means that by repowering existing wind farms, half as many turbines would be able to generate many times more wind power.

Modern wind turbines can have much larger towers and longer rotor blades than the turbines of the past and are thus able to generate much more electricity at fewer rotations per minute. This is also good news for biodiversity: with turbines increasing in size and decreasing in number, their impact on many species of bird is being reduced. In addition to all the technical benefits, repowering is also making an important contribution to the energy transition and helping to raise acceptance for the environmentally-friendly transformation of our energy supply, for example because slower-turning wind turbines are visually more pleasing and calming to the eye than faster rotors and because fewer installations are needed to deliver the same amount of capacity.

## EU Member States required to streamline approval procedures for wind power

Even though repowering opens up great opportunities for wind energy, in practice, there are often many bureaucratic hurdles to turbine replacement, not least due to planning and approval rules. The EU's Renewable Energy Directive (RED II) will now make things easier. For example, it sets out streamlined procedures that the Member States had to implement by the end of June 2021.

In Germany, these rules will be implemented into national law by adding a new paragraph to the Federal Immission Control Act. Up to now, repowering had been treated the same way as new greenfield projects in terms of the nature conservation, biodiversity and noise protection requirements to be met – and this despite the fact that wind turbines meeting these requirements had already been operated at these sites for a very long time. The most important change brought about by the new legislation is that new turbines that create no greater adverse effects or even fewer than the existing turbine will benefit from streamlined approval procedures. The rule is that new wind turbines must not be subjected to much stricter requirements than older models. This could help retired wind turbines to be replaced swiftly.

Why does this make economic sense? Let's look at the following example: An older wind farm consisting of eight turbines generating around 8 megawatts (MW) of capacity can be dismantled and replaced with three turbines generating around 12 MW of capacity. This means a 50% increase in capacity, but the output will increase even more. Depending on the specific location of the wind farm, the upgraded wind turbines could raise output from 8 to 30 million kilowatt hours (kwh) per year.

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### FURTHER INFORMATION

[\[→ Information about renewable energy\]](#)

[\[→ More information about onshore wind energy on the 'Erneuerbare Energien' website \(in German only\)\]](#)

[\[→ FAQ on wind energy \(in German only\)\]](#)

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## Quote of the week



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“Our goal is to protect our planet, whilst at the same time protecting our prosperity. We have the goal, but now we presenting a roadmap for how we are going to get there.”

President of the European Commission Ursula von der Leyen on the ‘Fit for 55’ package which raises the Union’s climate ambition.

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## What the press say

This time in ‘What the press say’: How much hydrogen will be needed in the transport sector in the future, how Sweden is sending a strong message by producing green steel, and why the German grid is more reliable than ever before in spite of the energy transition.



### **Handelsblatt, 23 August 2021: “Duration of outages at a minimum low – never before has the German grid been more reliable”**

The energy transition is making it increasingly difficult to manage the grid. However, according to Handelsblatt, the average duration of outages in 2020 fell to an all-time low.

### **Frankfurter Rundschau, 22 August 2021: “Green steel from Sweden”**

A Swedish producer has for the first time delivered climate-friendly steel that was produced using green hydrogen. As reported by Frankfurter Rundschau, German industrial businesses are also working towards making the shift.

### **Erneuerbare Energien, 15 August 2021: “How much hydrogen will be needed in the transport sector”**

Erneuerbare Energien looks at the requirements that will need to be met by power-to-x technologies and products to be successful in the next few years and explains the third power-to-x roadmap developed under the Kopernikus project P2X.

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## **The Federal Ministry for Economic Affairs and Energy presents new funding strategy for the regulatory sandboxes for the energy transition**

Companies and research institutes can now submit, all year round, project sketches for all priority areas of the 7th Energy Research Programme in the funding area ‘regulatory sandboxes for the energy transition’. The regulatory sandboxes for the energy transition form part of the Federal Government’s 7th Energy Research Programme and are thus an integral part of Germany’s energy research policy. Their focus is on projects that test and optimise innovative technologies under real-life conditions and on an industrial scale. The first projects were launched in 2020 and 2021. They were selected from the winners of the Regulatory Sandboxes for the Energy Transition competition.

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# Fifth annual meeting by the Energy Efficiency and Climate Action Networks Initiative to be held on 22 September 2021

The Energy Efficiency and Climate Action Networks Initiative (IEEKN) was launched by the Federal Government and the business associations at the end of 2014. It is one of the central measures undertaken as part of the National Action Plan on Energy Efficiency (NAPE). The initiative is to help companies set goals for themselves in order to improve their energy efficiency and climate impact as part of a moderated transfer of expertise. The German Energy Agency (DENA) heads up the IEEKN office on behalf of the Federal Ministry for Economic Affairs and Energy. Registration for the annual meeting is free of charge. It will be held under the motto “Working together to improve energy efficiency and climate action”.

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