



Energy transition progress in 2019

A package of measures to mitigate climate change, a greater share of renewables and fresh momentum for grid expansion – Let's look back at the past twelve months. [Find out more](#)



Having a say on the expansion of the grid

Since the beginning of 2015, Germany has been hosting a public dialogue on the electricity grid. For the residents of local communities, to be able to be involved in the energy transition in this way is welcome and important. Find out below about the success story of the first five years.



The aim of the public dialogue on the electricity grid is to create the opportunity for an honest and transparent exchange on electricity grid expansion to take place. Serving as a neutral and independent contact points, the local public dialogue teams are on hand for local residents who want to discuss the issues at hand. They provide information about many different topics, for example on nature and soil conservation or the different ways that members of the public can get involved. This kind of public dialogue is very important: although the energy transition in Germany enjoys a great deal of public support, for many, things become more complicated as soon as they become affected by it personally. 'We are here for the people and want to listen, inform and explain,' says the public dialogue's project manager, Julia Spönemann.

Dialogue and information throughout Germany

Over the past five years, public dialogue staff have provided information on the complex interrelationships between the expansion of the electricity grid and the energy transition on 445 occasions – whether at weekly markets, in front of town halls or in local pedestrian areas. They also drew residents' attention to important dates and information events taking place the local region. In addition, the public dialogue on the electricity grid has co-organised 710 events, hosted 111 regional grid meetings and held 81 evening events for local residents throughout Germany.

Federal Minister for Economic Affairs and Energy, Mr Peter Altmaier, also answered questions for the public dialogue initiative during his trips around Germany to engage with grid expansion issues. 'The large-scale electricity highways will carry the lifeblood of the energy transition. To make this happen, we need everyone to support us – the federation, the Länder and the municipalities. And, crucially, our citizens living close by,' said Minister Altmaier on the occasion of his third such trip on which he visited Hesse in February 2019.

Since the launch of the public dialogue at the start of 2015, ten citizens' bureaus have been answering and recording all of the questions and opinions of residents in the different regions of Germany. Many people who do not have such a citizens' bureau in the vicinity have since received visits from a mobile version of the same, known as the 'Dialogmobil'. After all, the most important task of the public dialogue on the electricity grid is to be in those places where people are affected by grid expansion. Since 2015, the mobile citizens' bureau has been on the road visiting more than 472 different places where there have been new developments in grid expansion or where an additional need for discussion and information has arisen.

The public dialogue is continuing

Even after five years of public dialogue, not all questions have been answered of course, and new topics are also coming to the fore. The good news is that the public dialogue is continuing and, from 2020, will be extended. Members of all communities around the country will continue to have a regional contact person, and new types of events will be hosted to engage with members of public on an level. The online services of the public dialogue on the electricity grid will also be further extended. The information website www.buergerdialog-stromnetz.de already provides clear and easy-to-understand information on overarching issues relating to grid expansion as well as advertising the events being hosted as part of the initiative. The online citizens' bureau is on hand to be contacted

with both questions and suggestions. In the future, members of all local communities throughout the whole country should be able to get into contact with the public dialogue via social media. After all, the rapid expansion of the grid is nothing less than the very backbone of the energy transition.

FURTHER INFORMATION

[\[> Information website on the public dialogue on the electricity grid](#)

[\[> Information website on grid expansion operated by the Bundesnetzagentur](#)

What exactly is shore-side electricity?

Why does shore-side electricity have more to do with the sea than the shore and how can it make ocean liners more climate-friendly? To find out the answers, please read on.



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The task: to make ocean-going ships more environmentally friendly. New fuels for ship engines and shore power connections in seaports can help with this.

It is a standard day for the ocean liner. The vessel has already fought its way many nautical miles through the waves of the sea into the port of Hamburg. On its journey, it is powered by marine diesel, which is not exactly good for the climate. But having arrived at the berth, is its environmental impact now over? By no means, because the diesel engines continue to run at the port as well. Here too, the ship must be supplied with electricity – and plenty of it. Exhaust gases such as nitrogen oxides and carbon dioxide waft into the fresh coastal air and harm the environment.

Whilst in port, seagoing vessels should therefore not supply themselves with electricity via their diesel-powered generators, but should use what is known as shore-side electricity in order to better

protect the environment. Shore-side electricity therefore has more to do with the sea than with the shore as it describes the onshore electricity that is used to supply water vessels only.

Plugging in container ships, ferries and cruise ships

Using shore-side electricity to operate ships helps protect the climate and improves the air quality in and around the ports. Despite its advantages, shore-side electricity has not been particularly popular with ship-owners as yet. This is because there are still too few such shore-side power installations and therefore few ships worldwide that have been converted to be able to use it. The large quantities of electricity required means that shore-side electricity is also more expensive than using the ship's diesel engine to generate electricity. In fact, the cost for ship owners is around three times higher than if they generate electricity on board.

In order to make the use of shore-side electricity in seaports more economically attractive, Germany's Federal Cabinet adopted an ordinance on grid charges for shore-side electricity and on the textual adjustment of rules in regulatory law in early November 2019. Although this sounds complicated, it is quite simple to explain. Under this new regulation, local electricity grid operators can now offer ship owners the possibility to use their grids at a lower daily rate while their vessels are in port. Up to now, these services could only be used upon payment of an annual or monthly service charge. However, the offer is subject to the condition that the grid operator is permitted to interrupt the supply of shore-side electricity to seagoing vessels if necessary. For the ocean liners, this is no problem as they can quickly go back to using their on-board power generators.

LNG as fuel for ocean liners

Another way to make ocean liners cleaner is by powering them with liquefied natural gas (LNG). The 300-meter-long cruise ship AIDAprima is just one example here. In 2016, AIDAprima was the first cruise ship in the world to generate its electricity in an environmentally friendly way by using LNG. The ship also has a shore-side connection for power supply. Compared to generating its power from conventional marine diesel, AIDAprima was able to reduce its nitrogen oxide emissions by 80 per cent and its carbon emissions by an impressive 20 per cent. In December 2018, the AIDAnova was the first cruise ship to be operated entirely with LNG.

FURTHER INFORMATION

[\[→ Press release by the Federal Ministry for Economic Affairs and Energy: Federal Government improves framework conditions for shore-side electricity supply in seaports \(in German only\)\]](#)

Floating solar cells

Researchers on the German energy transition are developing pieces of floating film fitted with organic solar cells. These sheets can protect water reservoirs and generate electricity sustainably at the same time.



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Ultra-slim organic solar cells are up to 1,000 times thinner than a human hair and the great new hope vested in the research project entitled 'Organic photovoltaics for covering water reservoirs' (H2OPV). In this project, experts are investigating how pieces of environmentally friendly film integrated with these cells can be used to advance the energy transition. The idea is to use the pieces of floating film to protect water reservoirs from pollution and evaporation and generate electricity at the same time.

The first practical tests are already under way at the Freiburg Fraunhofer Institute for Solar Energy Systems (ISE). As part of these tests, a strip of solar film measuring 50 meters long and 36 centimetres wide was coated and lots of 30 by 40-centimeter individual modules connected to one another. Solar cells that are made of organic substances rather than silicon have many advantages, so the researchers involved hope to use this apparatus to gain important insights that will enable such modules to be produced using industry-based methods in the future.

Flexible materials for diverse applications

Depending on the production process, organic solar cells can be flexibly bent and – according to expert assessment – can be manufactured more cheaply on an industrial scale than conventional photovoltaic modules. They work based on the use of semiconductor materials that convert the energy of the sun's rays into electricity. In organic photovoltaics, the semiconductor material used in the solar cells consists of carbon compounds. In conventional solar cells, the semiconductor is usually made of crystalline silicon, which is a sturdy, inflexible material. Organic photovoltaics therefore offers many new possibilities as the semi-conductor material can be applied in thin, flexible layers on flexible films or other flexible materials.

The lifetime of the cells and their efficiency (the proportion of solar radiation that can be converted into electricity) is still not comparable to that of crystalline silicon solar cells. But the speed at which such materials are being developed today is high. The researchers are therefore confident that there will soon be significant progress made in raising the efficiency of their modules. The project partners are already working on new organic semiconductor materials which it is hoped will be more efficient than the existing ones but just as durable. The target is for them to be able to last for at least a decade.

In a first step, the researchers are focusing on the use of the films as a floating photovoltaic system which is already far ahead of its relatives. It can be used as an airtight cover for water reservoirs in order to reduce pollution and evaporation. This could be of particular interest to countries that have strong solar radiation and high temperatures. Not even algae is able to survive underneath the cover film. This means that the water does not need any chemicals to be released into it, nor does it require the energy-intensive addition of oxygen to be pumped in. Transporting the films and installing them is also easy, all of which saves energy and costs.

Photovoltaic technology that is especially environmentally friendly

Project manager Markus Gnass has long had many other areas of application in mind as well. He believes that the strips of tarpaulin could also be used to cover flat roofs. 'The solar cells would then already be integrated into the covering and no further installation of photovoltaic modules would be needed,' Mr Gnass explains. He is coordinating the joint organic solar cell project on behalf of ContiTech Elastomer-Beschichtungen GmbH.

In principle, the thin and sturdy strips of tarpaulin can be put to good use wherever something needs to be covered. They could be used, for example, on greenhouses which have a high energy requirement, or on landfills, which will then be upgraded. Mr Gnass also believes that they could be used in traffic, for example as tarpaulin for trucks. In order for their use on vehicles to be economical, the efficiency and effectiveness would have to be much higher, he says.

There is still some way to go, but the project partners are already certain that organic photovoltaics has the potential to become the most environmentally friendly photovoltaic technology. The semiconductor does not involve the use of any heavy metals and the material used has a good environmental footprint. It can be produced using comparatively little energy and requires little material resources due to the extreme thinness of the layers. The Federal Ministry for Economic Affairs and Energy is providing approximately 2.5 million euros in funding for the H2OPV research project.

FURTHER INFORMATION

[\[→ Further information on the H2OPV project the Federal Ministry for Economic Affairs and Energy's ENArgus information system \(in German only\)\]](#)

[\[→ Information website on electricity research operated by the Federal Ministry for Economic Affairs and Energy\]](#)

Quote of the week



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'The people in Germany are pleased to work with us on the task of the century – the energy transition. Over the past five years, we at the public dialogue on the electricity grid have spoken with a huge number of people about grid expansion and have explained how the energy transition can be implemented in their region'.

Dr Peter Ahmels, manager of Bürgerdialog Stromnetz, the public dialogue on the electricity grid.

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