Federal Ministry for Economic Affairs and Climate Action

Energiewende direkt

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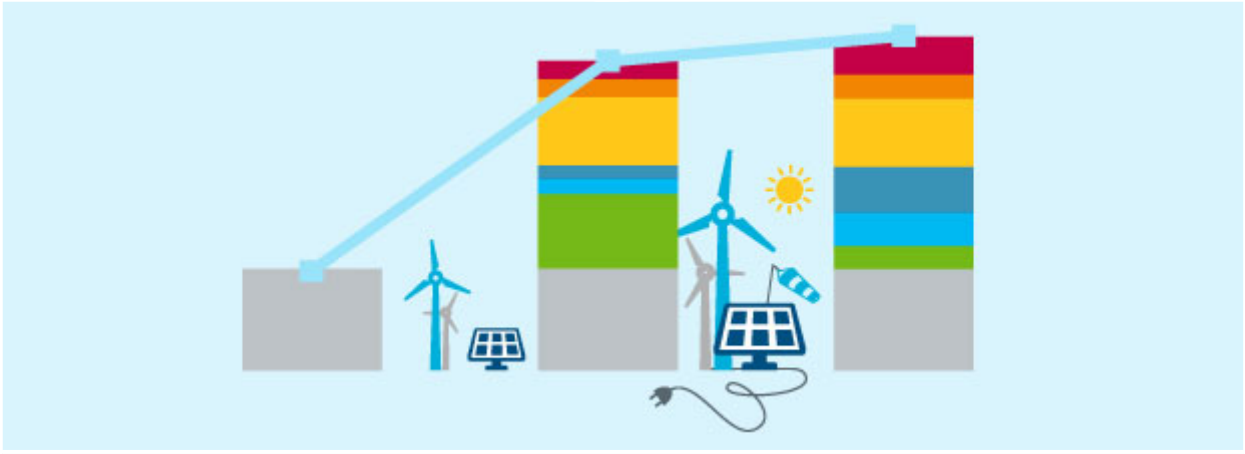

Renewable energy surcharge stabilises

Wind power, the price of electricity on the exchange, the equalisation scheme: what factors influence the renewable energy surcharge? A new study by the Institute for Applied Ecology (Öko-Institut) looks at how wind power, the price of electricity on the exchange and the equalisation scheme each affect its pricing. **Find out more**

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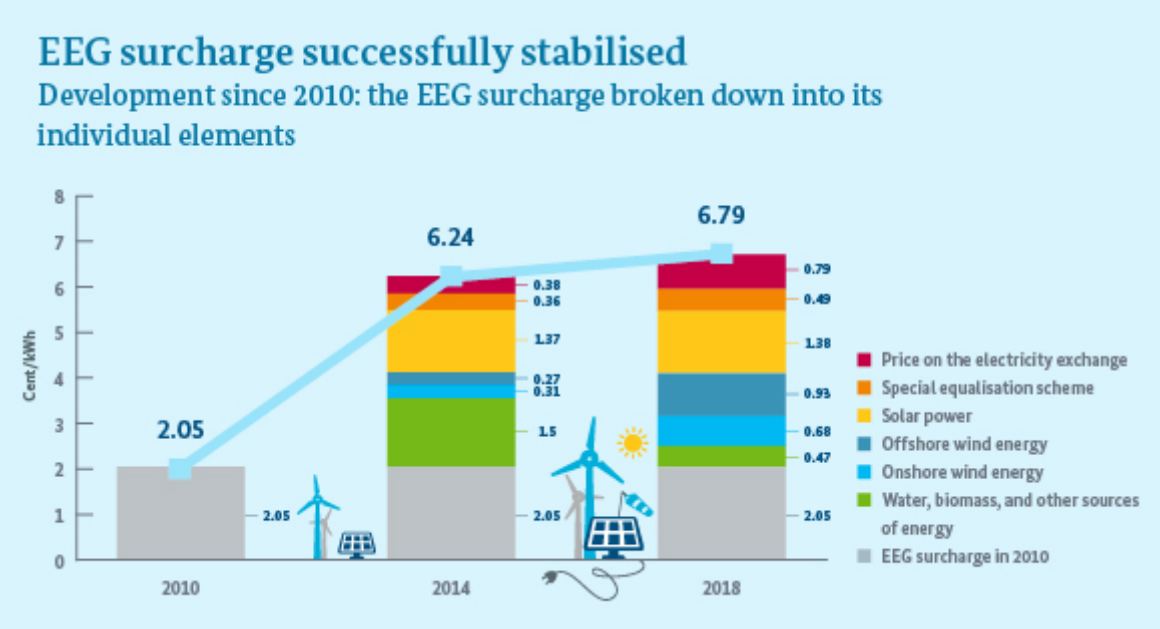

In Germany, the price of the renewable energy surcharge (EEG surcharge) – used to finance the expansion of renewables on the electricity market – is a topic of public interest. This surcharge is paid by customers via their electricity bills. Apart from the discussion on whether the surcharge is too high and how it can be reduced, there is also a lot of speculation about what exactly leads it to rise. The Federal Ministry for Economic Affairs and Energy has therefore commissioned the Öko-Institut to undertake a study into what really does affect its price progression.

Reforms of the Renewable Energy Sources Act having a positive effect on electricity bills

Between 2010 and 2014, the renewable energy surcharge often increased at rapid pace, climbing by 4.2 cents per kilowatt hour (ct/kWh) overall. From 2014 to 2018, however, the rise was only minimal – 0.5 ct/kWh. The average household is paying roughly the same in electricity bills as they did in 2014. The fundamental reforms undertaken over the past four years have made it possible to put an end to the spiralling increase and to stabilise both the surcharge and, with it, electricity prices as well.

Price on the electricity exchange vs. EEG surcharge

The price on the electricity exchange has been found to contribute 20 per cent to the rise in price of the EEG surcharge. This makes it one of the most important influencing factors. Electricity from renewables is mainly sold via the electricity exchange, meaning that if the price on the exchange falls, so too do market premiums for this electricity. This drop in revenue then has to be balanced by charging a higher EEG surcharge. Since 2010, the price on the electricity exchange has fallen dramatically. This reason alone has contributed a rise in the EEG surcharge of 0.8 ct/kWh up to 2018. The amount paid by the consumer is calculated based on the price of electricity on the spot market plus the EEG surcharge.

Exemptions for electricity-intensive companies

Almost two-thirds of the EEG surcharge is financed by businesses and public institutions, and just over one-third is funded by residential customers. Both railways and those companies which use a lot of electricity and face international competition can apply for a partial exemption from the EEG surcharge. However, these exceptions only made a minimal contribution to the rise of the EEG surcharge. In total, the ‘special equalisation scheme’, as it is known, contributed 0.5 ct/kWh to the rise in price. This is equal to 10 per cent of the rise in price of the EEG surcharge since 2010. The vast majority of companies are continuing to pay the full EEG surcharge.

Until 2014, the use of solar energy represented a very cost-intensive means of generating green electricity, thus making a high contribution to the increase in the EEG surcharge. Since then, the situation has changed. Although solar installations have continued to be built since this date, the technology involved has become continually cheaper, meaning that solar energy has been contributing to the rise in the surcharge less and less.

This trend started to be reversed following the reform of the Renewable Energy Sources Act in 2014 and continued with a further reform in 2017. The 2014 revision stipulated binding deployment

corridors, concentrated continuing expansion on the low-cost technologies of onshore wind and photovoltaics, and restricted the creation of additional capacities for what is comparatively cost-intensive biomass.

Over the past four years, wind energy has seen the strongest development among all sources of energy

Offshore wind turbines are a relatively new technology with correspondingly high initial costs and feed-in tariffs. This explains why offshore wind has contributed to the increase in the EEG surcharge over recent years.

However, competitive auctions are already causing the costs of new wind energy and photovoltaic installations to drop dramatically. In the future, the cost of offshore wind energy will fall even further, as will wind power generated onshore, which is already cheap today. In fact, the operators of three out of the four offshore wind farms that took part in the auction submitted zero-subsidy bids. This means that from 2023, they are to be operated without receiving any government funding under the Renewable Energy Sources Act. When it comes to wind power produced onshore, the level of funding awarded for the winning bids was also very low – at around just 4 ct/kWh.

FURTHER INFORMATION

Good prospects: households benefiting from stable electricity prices

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Electricity market data now available for download – isn't that SMARD?

Did you know that the SMARD online platform has allowed users to trace electricity market data in real-time since July 2017? At the end of 2017, new features were added, making the platform even more interesting for users to visit.

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"SMARD is a treasure trove for all those who are interested in the energy transition and in the electricity market in particular," Jochen Homann, President of the Bundesnetzagentur, said on the day the online platform was launched in July 2017. Rainer Baake, State Secretary at the Federal Ministry for Economic Affairs and Energy, added: "The platform is user-friendly and easy to navigate for everyone. It also offers a wide set of analysis tools for experts." The Bundesnetzagentur is managing the platform on behalf of the Federal Ministry for Economic Affairs and Energy and had already announced that it would continue to enhance the SMARD platform in future.

Last December, it rolled out a major update, delivering a wide range of improvements for its users. By selecting the 'download data' section, users can now easily save all of the information displayed in the 'visualise market data' section on their computer.

Improvement no. 1: all data can be downloaded free of charge

Whenever users download data from the platform, they can decide whether they want to save the data as an Excel table or in another data format. This new feature can be used to download entire timelines that show about how much each source of energy has contributed to electricity generation over time, starting in January 2015. After selecting a particular time period, users can decide if they want the data to be displayed for every quarter of an hour, hour, day, week or year. All of the data can be downloaded free of charge and users also have the right to further process the data that they have downloaded (under the so-called CC BY 4.0 licence).

The SMARD data available for 1 January 2018 is particularly interesting: it shows that in the early hours of New Year's Day, renewables were able to cover 100% of Germany's electricity demand, with 40,000 megawatts delivered by wind power, hydropower and biomass alone.

Improvement no. 2: all of the platform is now available in English

All sections of the platform are now available, not only in German, but also in English. This is important as the energy transition also has a pan-European dimension. An ever increasing number of countries within the EU are switching to renewable energy. This is why SMARD offers key data about the electricity market not only for Germany, but also for Austria and Luxemburg. The three countries are part of the same electricity market area.

Improvement no. 3: updated list of German power plants

In addition to this, the Bundesnetzagentur has extended its list of German power plants to cover a total of 760 facilities. The list includes geographical information and master data such as location, plant operator, the main source of energy used, and rated output. For many power plants, photographs have also been included. The overview can be displayed either as a map or a table. Users also have the option to search for a particular power plant via a special interface.

FURTHER INFORMATION

[→ SMARD - electricity market data for all
[→ Electricity market of the future

What exactly are flexibility options?

One of the main goals of the energy transition is to increase the amount of electricity that is being generated from renewable energy. However, this will only be possible if our energy supply becomes more flexible. Read on to learn more about this and about how it all relates to cooking a stew.

This is what it's all about: Optimising our electricity supply system to ensure that the share of renewables can be further increased

Nothing beats a good home-made stew – and what you put in it is up largely to your own creativity: if you run out of potatoes, you can just add carrots instead. If you have already added a good pinch of ground pepper, you might leave out the chili peppers this time. So making a great stew means making the best possible use of the ingredients you have available.

The same concept applies to the energy transition and to combining different flexibility options. Just like you add different ingredients to make a good stew, you can use different types of flexibility options to make the electricity supply more reliable, secure and affordable.

As the energy transition is being rolled out across the country and the share of renewable energy continues to grow – it is set to reach 50 per cent by 2030 and 80 per cent by 2050 – the way electricity is supplied needs to be optimised. Renewable energy is cheap to produce, but it is also volatile. In order to ensure that our electricity supply is secure and affordable at the same time, we need to use the right combination of flexibility options.

Option no. 1: flexible supply

Most types of renewable energy are weather-dependent. Wind power and solar energy are generated whenever the wind blows and the sun shines – irrespective of the actual demand for energy.

However, if there isn't any wind or sun, no electricity is generated – this distinguishes wind turbines and solar installations from fossil-fuel power plants that can supply electricity around the clock. In order to balance supply and demand, our traditional coal and gas-fired power plants need to be able to respond more flexibly, to adapt the amount of electricity they generate both to the demand that exists, and to the amount of fluctuating renewable energy that is being generated. Basically this means that fossil-fuel power plants need to reduce or increase the amount of electricity they supply more quickly and more frequently.

Ingredient no. 2: demand-side management

Having to respond to an inflexible supply of electricity is nothing new. Large-scale electricity users in the industrial sector, but also in commerce, trade and the services sector have had to respond to inflexible sources of electricity – for example nuclear power – in the past. They responded by consuming more electricity at times when it was cheap, for example during the night.

Renewable energy, too, requires electricity consumers to adapt: they need to consume electricity at times when large amounts of wind and solar power are available. The price on the electricity exchange is a key indicator here: if supply greatly exceeds demand, prices on the exchange will fall. Large-scale electricity consumers, in particular, can benefit by consuming more electricity at times when large amounts of electricity are available and therefore prices on the electricity exchange are low.
They can, for example, use any extra electricity to produce heat (power to heat) and therefore reduce their demand for fuel oil and gas. To learn more about this, please click here. In addition to this, electric cars can be charged at times when there is plenty of electricity available.

Ingredient no. 3: flexible storage

Electricity in itself cannot be stored. Kilowatt-hours don't wait around until they are needed. Storing electricity means transforming it, for example in pumped-storage facilities or batteries.

Storing electricity is necessary in situations when electricity generation is inflexible and consumers cannot manage demand. In situations like this one, usually, pumped-storage facilities in the Alps are being used. This has been sufficient up until now. In the future, however, it might be necessary to use additional storage facilities, which are located in Scandinavia. These could be tapped by laying additional marine cables, which is relatively cheap. Battery storage units are a lot smaller than pumped-storage facilities. They help balance small fluctuations in supply and demand – so-called frequency variations – and therefore make a key contribution to ensuring security of supply.

Ingredient no. 4: expanding the grid

The most import flexibility option of all is the grid. It ensures that fluctuations in supply and demand are balanced across regions. If, at one given moment, one German region is producing large amounts of electricity, but the demand for this electricity in this region is low, the electricity is transported on to another region, where the demand is higher. However, in order for this to work well, the grid needs to be in good shape. If there are bottlenecks in the grid, the wind power that is being generated in the north of Germany cannot be passed on to the large centres of demand that are located in the west and south of the country. The Federal Government is therefore doing everything in its power to build high-voltage power lines across the country in order to ensure that the electricity can be transported

to wherever it is needed.

Making the grid more flexible across the whole of the EU will also help improve security of supply. If Germany is generating plenty of wind and solar power, for example, it can supply it to neighbouring countries that urgently need it. It also works the other ways round: at times when the wind is blowing less hard and the sky is cloudy and Germany has a high demand for electricity, pumped-storage facilities in the Alps and Scandinavia can be used to bridge the gap. As Germany is also part of the European grid, it needs to maintain fewer back-up power plants. This reduces the total cost of its electricity supply (to learn more about the Energy Union, please click here).

This also means that putting in place a well-developed grid in both Germany and the EU will make using other flexibility options – which are usually more expensive – obsolete in the medium-term. This is another reason why flexibility options are at the very top of the Federal Government's agenda.

The more the merrier

The four ingredients named above are only a few examples of a wide range of flexibility options that can be used to bring about an energy supply that works well. And at the heart of all of these options lies digitisation, which connects electricity generation facilities, consumers and the grid in an efficient and smart manner, helps use less energy, and lets us use energy more efficiently.

At the end of the day, the market will decide which flexibility options are the most sought-after. And it will be only the most effective and efficient ones that will help make the energy transition a success.

FURTHER INFORMATION

[→ Electricity market of the future
[→ Flexibility options in the Federal Ministry for Economic Affairs: 'Electricity 2030 – long-term trends and what we need to do over the coming years'
[→ An electricity grid for the energy transition

2018 Energy Efficiency Hack: Hacking solutions for the energy transition

The word hacker has become associated with someone who breaks into a computer system. Originally however, the word was used to describe tech-savvy persons who use their technical knowledge to find creative solutions. This is what the Energy Efficiency Hack, which will take place in Berlin this February, is all about.

Get ready for the second edition of the Energy Efficiency Hack, which will take place in Berlin from 18 to 19 February 2018! The hackathon – a term created from the words 'hack' and 'marathon' – will bring together coders, engineers, designers, psychologists, sociologists and entrepreneurs who will work in teams to find solutions to particularly important energy efficiency challenges.

Three different problems, one common goal: reducing energy consumption

The problems that this year's participants will be asked to work on are:

1. How can we use the internet of things to keep food from going bad in our supermarkets, i.e. reduce the amount of food that reaches its expiration date and therefore has to be thrown away? And how can we, at the same time, reduce the amount of energy required for keeping food refrigerated in our supermarkets?
2. How can we design a smart and customer-friendly tool that helps consumers choose the right type of insulation for building or renovating their homes and therefore cut their energy bills?
3. How can we improve building automation systems to make them particularly easy to use – for example when it comes to controlling windows, blinds, heating, ventilation and lighting systems? How can we market smart building automation products more successfully and ensure that as many consumers as possible opt for this way of reducing their energy consumption?

Each team will decide which of these three problems they want to work on, and will be given ten hours – on the second day of the event – to develop solutions. They will then be asked to present their solution to a panel consisting of jurors from across all sectors. The winners will be honoured directly at the event. They will be given non-cash prizes and the opportunity to continue working on their idea with one of the companies represented at the event.

Policymakers and businesses join forces to improve energy efficiency

This year's Energy Efficiency Hack will once again be hosted by the German Energy Efficiency Initiative (DENEFF). DENEFF consists of more than 150 companies that are leading in the field of energy efficiency and that have all set themselves the objective of improving energy efficiency.

Better energy efficiency is not only key in order to bring about the energy transition, it is also important for helping businesses cut their energy bills so they can continue to stand the test of global competition. An ever larger number of start-up are also picking up on the idea of improving energy efficiency. This will help boost competition and at the same time create new jobs.

Federal Minister for Economic Affairs and Energy, Brigitte Zypries, who serves as the patron for the event, said: "Our goal is for Germany to maintain its position as one of the leading innovators, not least in the energy sector. If we want to achieve this goal, we need to try new things and venture into uncharted territory – which is the idea behind the Energy Efficiency Hack. We are therefore delighted that, following last year's first successful Hack, DENEFF has decided to host a second edition of this event."

Sign up now!

The 2018 Energy Efficiency Hack will take place in Betahaus – a co-working space in Berlin's Kreuzberg district. Applications need to be submitted by 9 February 2018. If you are a student, start-up or industry representative working in the field of energy efficiency and want to sign up for the event, please click here. To give hackers from all over the world the opportunity to take part, the event will be held in English.

FURTHER INFORMATION

[→ 2018 Energy Efficiency Hack
[→ DENEFF website
[→ Information about energy efficiency

Quote of the week

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“If we want to meet our long-term climate change mitigation goals, we need to use renewable energy across all sectors, not least in the transport and buildings sector.”

Rainer Baake, State Secretary at the Federal Ministry for Economic Affairs and Energy, at the 8th Assembly of the International Renewable Energy Agency (IRENA) in Abu Dhabi.

A key milestone: the 28 EU energy ministers set the course for a European energy transition

In December of last year, the EU’s energy ministers presented their joint position on the legislative package entitled ‘Clean Energy for All Europeans’. The package had been adopted by the European Commission and set out a number of proposals, including better integration of the national energy and climate plans, the roll-out of renewable energy across the EU and the modernisation of the electricity market. The next step now is for the Council, the Parliament, and the Commission to engage in ‘trilogue’ negotiations on the package.

European Commission approves exemption of existing facilities from the renewable energy surcharge

The European Commission has cleared Germany’s decision to fully exempt existing installations used for the operator’s own electricity supply from the renewable energy surcharge and declared this to be in line with EU state-aid rules. In addition to existing installations, new installations generating electricity from

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renewable sources – for example PV installations on buildings – are also covered by the Commission's decision.

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