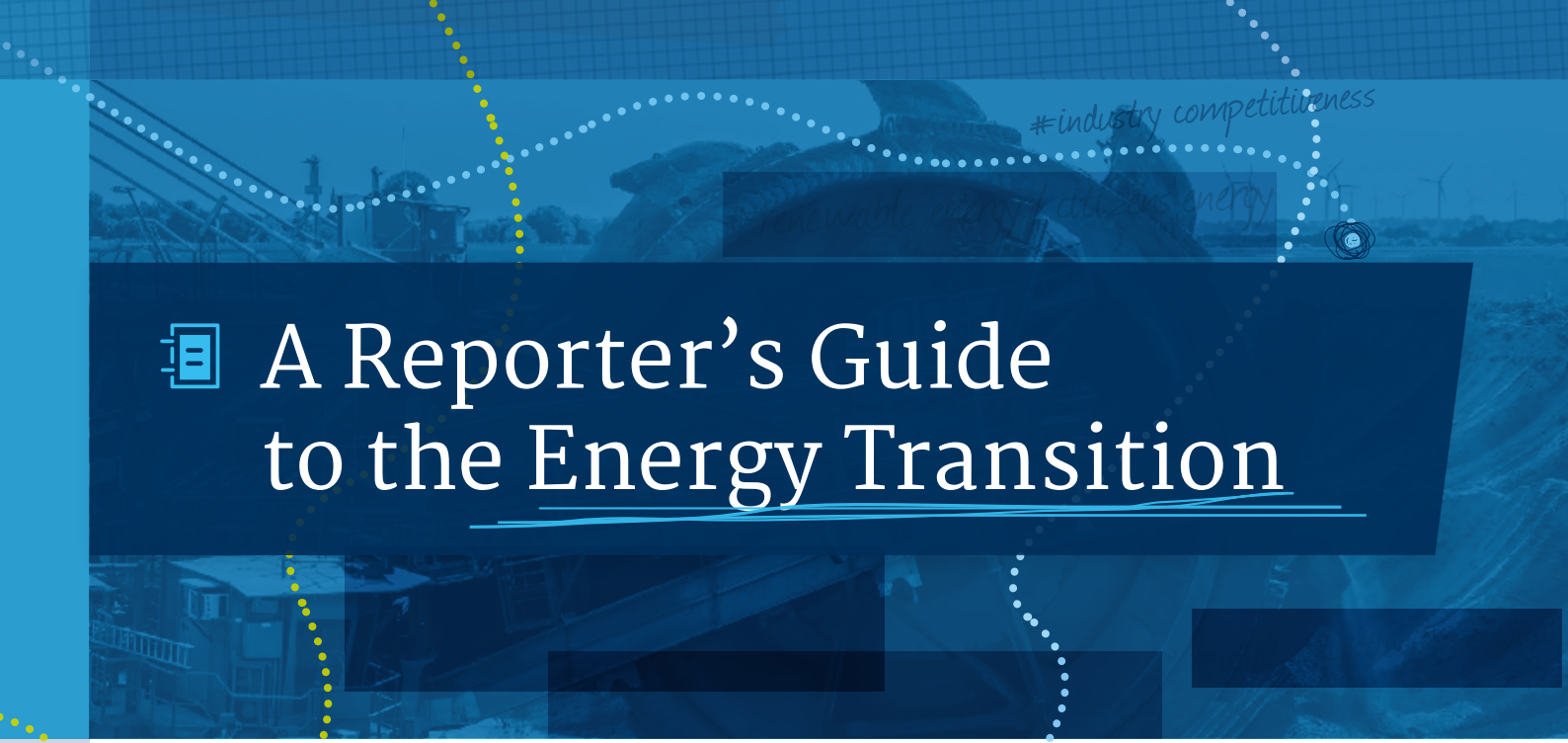

A Reporter's Guide to the Energy Transition

Energiewende in Germany

7th edition 2019

Journalism for the energy transition

CLEAN ENERGY WIRE


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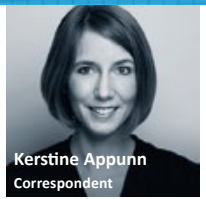
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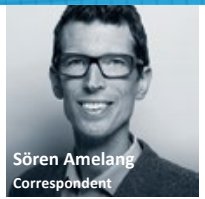
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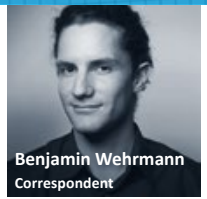
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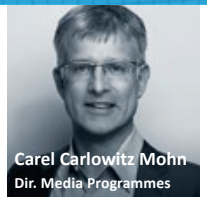
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A Note from CLEW

The global energy transition to win the race against harmful man-made climate change is slowly gaining momentum. As part of this, Germany is trying to step up its climate action activities, and its decades-long effort to fundamentally shift its energy supply provides valuable lessons on weaning a major economy off fossil fuels.

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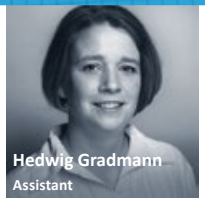
The repercussions of the country's Energiewende (energy transition) are felt across society and the business sector, offering journalists a wealth of exciting and important stories. But researching this massive event from outside the country is no easy task, even for the most seasoned reporter. The huge complexity of the technology and economics behind energy policy make things harder. Yet strong fact-based and critical journalism is essential to inform the international debate on ways to decarbonise the global economy.

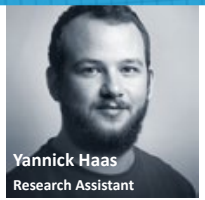
This is why Clean Energy Wire (CLEW) supports journalists in their work. Fully funded by two non-profit foundations – Stiftung Mercator and the European Climate Foundation – we enjoy independence from any business or political interests. Rather, we share our funders' commitment to work towards a climate-neutral economy in order to limit the impact of man-made climate change.

CLEW's **"A Reporter's Guide to the Energy Transition"**, now in its sixth edition, offers journalists a useful starting point by outlining the main story lines of the energy transition, providing contact details for experts, as well as links to key literature and articles.

Our website, **cleanenergywire.org**, offers lots more in-depth information and contacts. And our daily newsletter and our Twitter feed **@cleanenergywire** keep readers in the loop about Energiewende-related debates and events.

We have also launched the **CLEW Journalism Network (@ClewNetwork)** as a platform to allow journalists to find colleagues





working on energy transition stories, to collaborate on cross-border stories, exchange tips and views or collect background information from other countries. We invite all reporters and editors with an interest in the energy transition and climate policy to join.

We also organise workshops for journalists, offering a first-hand account of the Energiewende. But, most importantly, we provide assistance, answer your questions, and put you in touch with experts and fellow journalists across the globe – so don't hesitate to **ask CLEW**.

Sven Egenter and
the Clean Energy Wire team

Our team of journalists and media professionals in Berlin is available to support journalists in their work.

Contents

Energiewende in Germany: Timeline

1973-1975

"Nuclear power? No thanks!" Birth of Germany's anti-nuclear movement as protests force plans for a nuclear power plant in Wyhl to be aborted

1979/1980

Enter the Greens Germany's Green Party is founded, with an exit from nuclear energy and a renewable future as key demands

Activists first use the term **"Energiewende"**

What is the Energiewende? And where did it come from?

The energy transition, known in Germany as the Energiewende, is the country's planned transformation to a low-carbon, nuclear free economy.

The process has these key elements:

- the phase-out of nuclear power (by 2022) and fossil fuels
- the development of renewable energy sources and low-carbon technologies
- increased energy efficiency

However, since the introduction of feed-in tariffs for renewable energies in the 1990s, the project has been radically reshaping the energy system as a whole. As the traditional model of centralised power generation is being replaced by diverse sources of energy that fluctuate with the weather, the project's influence goes beyond the grid and the power market. While for now mainly focused on electricity, the Energiewende is also expected to transform other sectors like industry, housing,

... Energiewende in Germany: Timeline

1986	1991	1997/2005	2000	2007	2010	2011
Chernobyl disaster solidifies Germans' resistance to nuclear energy **Climate change** enters the discourse – a magazine story leads parliament to establish an advisory council	**Kick-starting renewables** New legislation introduces feed-in tariffs for renewable power	**Kyoto Protocol** Germany, the world's sixth largest emitter at the time, has to reduce CO_2 emissions under the agreement	**Renewable Energy Act** Renewables granted feed-in tariffs and grid priority **Nuclear phase-out #1** SPD-Green government and utilities agree to phase out nuclear by 2022	**EU targets** EU sets 2020 climate targets: 20% renewables share, 20% GHG reduction, 20% more efficiency	**Extending nuclear** The nuclear consensus is reversed by a conservative government **Energy concept** Govt. sets out renewables and climate targets for 2020 and 2050	**Nuclear phase-out #2** Merkel government formulates new nuclear phase-out by 2022 with large parliamentary majority after Fukushima disaster

construction, heating, and transport as all stakeholders are looking for ways to shape Germany's "all-electric" future. *For Germany's specific energy transition targets, see pages 6 – 7.*

There are already winners and losers. The big utilities' traditional business models have been hit hard, while consumers and some businesses are concerned about higher electricity costs. The coal industry was the first to benefit from the nuclear phase-out, but its future is now uncertain as the government has taken the first steps to a coal exit path by 2038 in order to step up efforts to cut greenhouse gas emissions. Meanwhile, entirely new businesses have sprung up.

New EEG & climate action
Govt. lowers feed-in tariffs, starts PV auctions and introduces plan to achieve 2020 climate targets

Slow progress
The Energiewende monitoring report shows climate targets are "in serious danger"

Spin-off
Utilities E.ON and RWE split to separate renewables from fossil plants

Climate Action Plan
Govt. adopts ambitious 2030 emission targets for individual economic sectors

Renewables Reform
Auctions determine renewables payments

G20 & COP23
Germany tries to maintain climate leadership, but emissions stagnate

New government
Wants to focus on grid expansion and sector coupling

Utilities shakeup
RWE and E.ON split up utility innogy, separating grids from generation

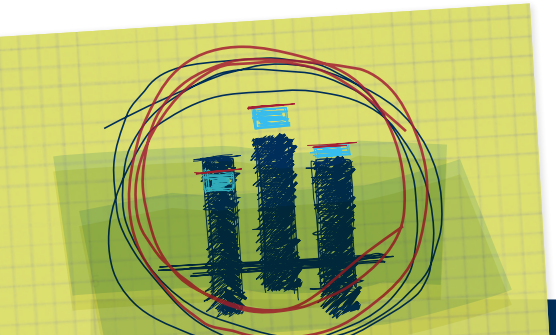
Coal exit pathway
Multi-stakeholder commission proposes gradual coal phase-out by 2038

Climate Action Law
Government plans to enshrine 2030 climate targets into law

#Energiewende – Targets

The overall objective of the Energiewende is to reduce Germany's greenhouse gas emissions and phase out nuclear power, making the economy more environmentally sustainable.

On a national level, Germany's official goals are to cut greenhouse gas emissions by 40 percent by 2020, by 55 percent by 2030, and by up to 95 percent by 2050. The share of renewables in final energy consumption is to rise to 60 percent (from 15.9 percent in 2017) by 2050. By the middle of the century, renewables are to cover at least 80 percent of the country's gross power consumption (36 percent in 2017).



In November 2016, Germany's government agreed on a basic framework – the Climate Action Plan 2050 – for largely decarbonising the country's economy by the middle of this century. In accordance with the Paris Climate Agreement, the plan fine-tunes Germany's climate goals. It includes target corridors for reducing greenhouse gas emissions in the individual economic sectors as interim goals for the year 2030. The energy sector will have to cut its emissions roughly by half compared to 2014 levels.

As for the progress made on these targets: In autumn 2017, the environment ministry warned that Germany was set to widely miss its 2020 emission targets, thereby threatening the entire project's credibility. The economy ministry's 2014 Climate Action Programme detailing additional measures and identifying CO_2 saving potential, is likely to be less effective than predicted. The Energiewende monitoring expert commission in 2018 warned that there were considerable deficiencies in improving energy efficiency, and that developments in the transport sector were going in the wrong direction (i.e. higher instead of lower emissions).

Sector targets for greenhouse gas reductions

Sector	2018 status* cut from 1990 levels	2030 target cut from 1990 levels
Energy	33 %	61-62 %
Buildings	44 %	66-67 %
Transport	0.6 %	40-42 %
Industry	31 %	49-51 %
Agriculture	22 %	31-34 %
Other	74 %	87 %
Total	**31 %**	**55-56 %**

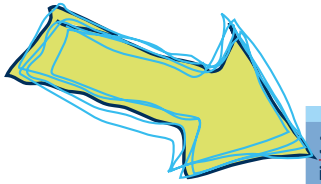
*2018 data preliminary. Source: Climate Action Plan 2050, UBA (2019).

Quantitative targets of the energy transition

*New conditional target according to coalition treaty 2018.

Sources: AG Energiebilanzen (2018), BMWi (2018), UBA (2018), BMU (2018).

#Energiewende – Key Figures



47.1 m Passenger cars registered in Germany (01/2019)

83,175 Pure electric cars registered = 0.17 % (01/2019)

1st rank for Germany in energy efficiency policy and performance score-card (ACEEE, 2018)

17th rank for Germany in the overall "Energy Transition Index" (WEF, 2019)

3.6 % Renewables' share in gross German power generation in 1990

34.9 % Renewables' share in gross power generation in 2018

93 % of Germans believe use and roll-out of renewables is very important or important (2018)

€ 24.6 bn Renewable surcharge paid by power consumers in 2018

338,500 People employed in the renewables sector (2016)

20,766 People employed in the lignite industry (01/2019)

15.1 minutes: Average power outage in Germany 2017

USA: 4 hours (2016)
GB: 47 mins (2016)
France: 53 mins (2016)
Poland: 192 mins (2016)

23.7 ↗ 30.22 ct/kWh Average household power price 2010 and 2019 – thereof 6.4 ct/kWh renewable surcharge in 2019

5.1 ↘ 4.4 ct/kWh Average electricity spot market price in 2010 and 2018

8.7 % Drop in energy demand for heating houses 2008 – 2017

€ 17 bn the government pays to energy efficiency measures in housing (by 2020)

14 % Renewables' share in primary energy consumption in 2018 (up from 1.3 % in 1990)

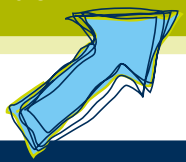
37.8 % Renewables' share in gross power consumption in 2018 (up from 3.1 % in 1991)

92 % of natural gas used in Germany is imported (2017)

97 % of crude oil is imported (2017)

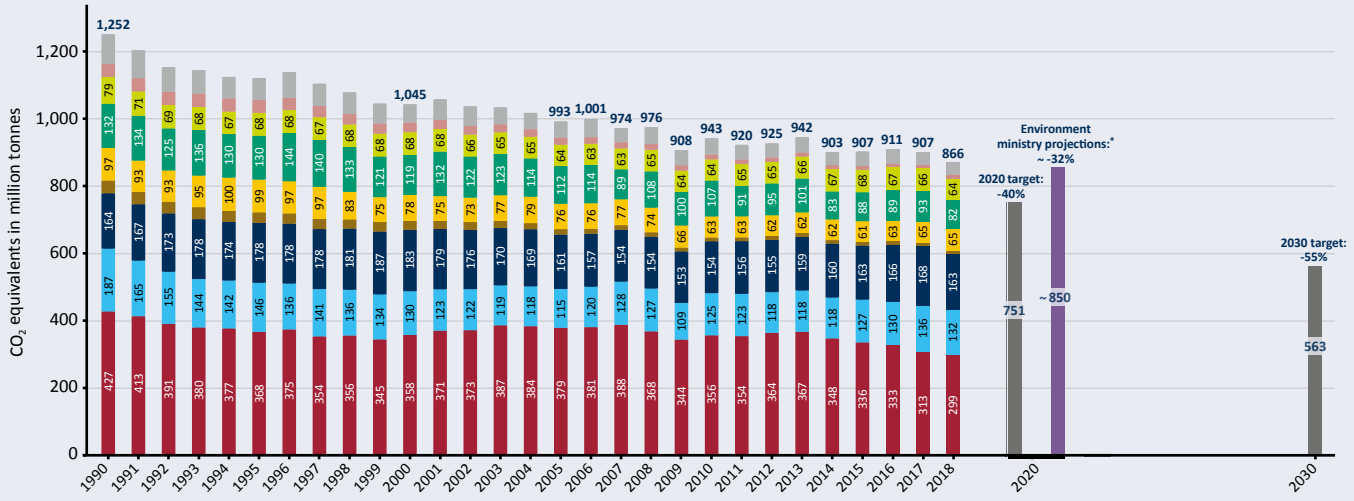
53.4 % rise in GDP since 1990 (2018)

13 % fall in primary energy consumption since 1990 (2018)



30.8% greenhouse gas reduction since 1990

Emission trends for Germany by sector 1990-2018



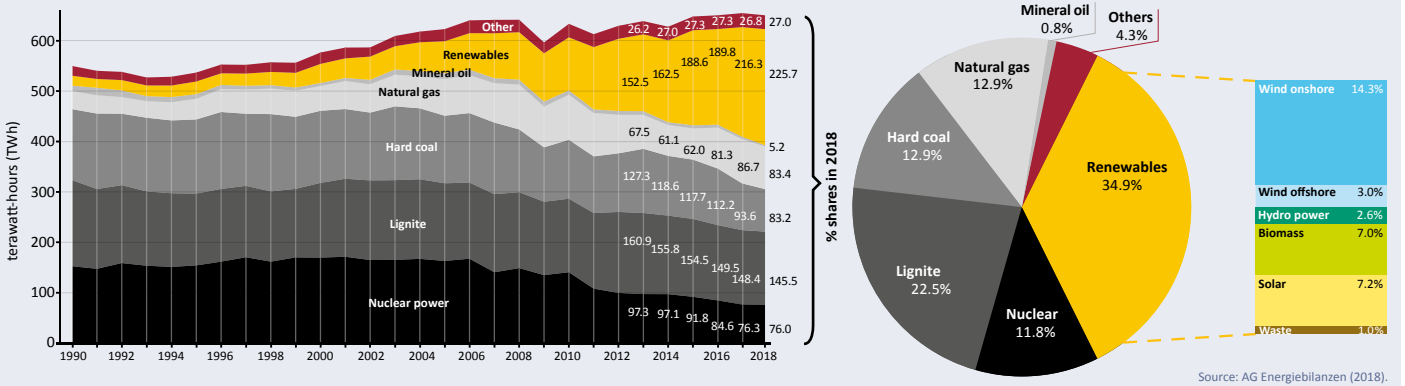
Without emissions from land use, land-use change and forestry (LULUCF)

*According to federal environment ministry calculations from October 2017, Germany is set to widely miss its goal to reduce greenhouse gas emissions by 40 percent by 2020.

Source: UBA, 2019.

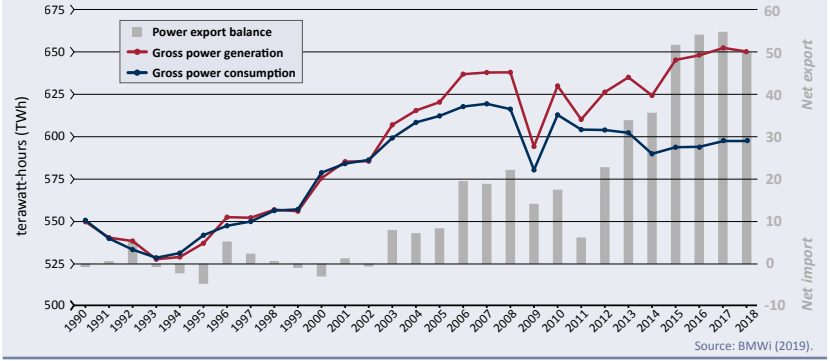
equal share of renewables & coal

Development of gross power production in Germany 1990-2018



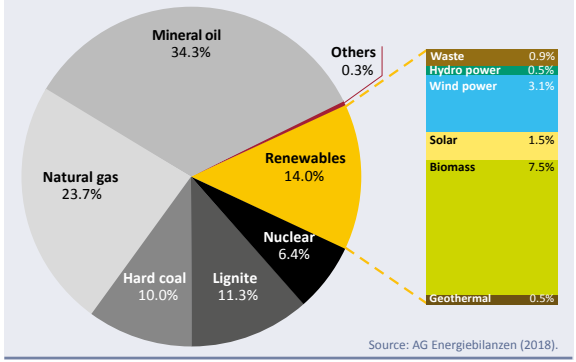
Source: AG Energiebilanzen (2018).

Germany's power export balance 1990-2018



Source: BMWi (2019).

Share of energy sources in primary energy consumption 2018



Source: AG Energiebilanzen (2018).

Germany remains net electricity exporter

#Energiewende – Dates 2019/2020

2019

8 – 9 April: Future Mobility Summit, BERLIN.

9 – 10 April: Berlin Energy Transition Dialogue, BERLIN.

12 – 14 May: 10th Petersberg Climate Dialogue, BERLIN.

15 – 17 May: Intersolar Europe, trade fair, MUNICH.

20 – 22 May: Berliner Energietage 2019 "Energiewende in Germany", BERLIN.

22 – 23 May: International Conference on Climate Action – ICCA2019, HEIDELBERG.

26 May: European elections in Germany.

26 May: State elections in Bremen.

4 – 6 June: BDEW Congress, energy conference by German Association of Energy and Water Industries (BDEW), BERLIN.

1 September: State elections in Brandenburg and Saxony.

10 – 11 September: 14th German Energy Congress, SV Veranstaltungen, MUNICH.

12 – 22 September: 68th International Motor Show (IAA), FRANKFURT/MAIN.

23 September: UN 2019 Climate Summit, NEW YORK.

27 October: State elections in Thuringia.

25 – 26 November: dena Congress, by German Energy Agency (dena), BERLIN.

2 – 13 December: COP25, CHILE.

2020

20 – 22 January: Handelsblatt Energy Conference 2020, BERLIN.

11 – 13 February: E-World energy & water trade fair, ESSEN.

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Fraunhofer ISE, Solar energy research institute and publisher of electricity production data. Also see their data and graphs at www.energy-charts.de, +49 761 4588-5147, www.ise.fraunhofer.de

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the experts

… for a list of over 250 experts and institutions with insights into the Energiewende see: www.cleanenergywire.org/experts

or find energy transition hotspots on the CLEW Research Map

#Energiewende – Reading in English

cleanenergywire.org Our website provides in-depth analyses (dossiers), factsheets, news articles, a daily press digest, an expert database, and more.

Agora Energiewende (2019) The European Power Sector in 2018; (2013) 12 Insights on Germany's Energiewende.

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#Climate and CO_2 #Fossil Fuels

Green pioneer Germany struggles to make climate protection a reality

©[hansenn] Fotolia.

As the home country of the Energiewende, Germany is considered a pioneer in the fight against man-made climate change. But despite a spectacular rise in power generation from renewables, the country's track record on cutting greenhouse gas emissions is mixed: It is set to miss its 2020 climate targets. Germany is now aiming at 2030 targets with its Climate Action Plan 2050, a roadmap to a climate neutral economy by mid-century. The government has pledged to enshrine these targets and how sectors are responsible to reach them into law in

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On cleanenergywire.org

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The energy transition and climate change

Political uncertainty weighs heavily on energy policy crunch time year for Germany

Article:

Germany's government coalition divided over draft Climate Action Law

Factsheets:

Germany's greenhouse gas emissions and climate targets

Germany's Climate Action Plan 2050

Germany's Climate Action Law begins to take shape

Putting a price on emissions: What are the prospects for carbon pricing in Germany?

2019. But the protracted battle over the details of the law and the accompanying measures revealed it will be a bumpy ride to turn climate ambition into practice, as the country needs to kick its habit of burning coal for power production – and say goodbye to petrol and diesel cars.

"My proposal is that we make fossil fuels used for heating or transport more expensive and, in return, make electricity cheaper."

Environment Minister Svenja Schulze (SPD)

#Coal

Europe's largest economy aims to exit coal to reach climate goals

© Pixabay.

Germany has officially set in motion the gradual withdrawal from coal, joining other major economies in the global farewell to the climate-damaging fossil fuel. Faced with stagnating greenhouse gas emissions despite a rapid expansion of renewable power, Chancellor Angela Merkel's coalition government set up a multi-stakeholder expert coal exit commission to come up with a plan. The task force recommended shutting the last coal-fired power plant by 2038 at the latest. It is now up to the government to move on the propos-

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Reading

Commission on Growth, Structural Change and Employment (2019) Final report (in German)

Ecologic et al. (2019) Phasing out coal in the German energy sector

Agora Energiewende (2018) A Future for Lusatia

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On cleanenergywire.org

Dossiers:

Germany's coal phase-out

The next German government and the energy transition

Articles:

German government stands ready to move on coal exit proposal

Relief about German coal exit deal fades as focus turns to implementation challenges

Factsheets:

Implementing Germany's coal exit proposal – the road ahead

German commission proposes coal exit by 2038

Coal in Germany

Germany's three lignite mining regions

Climate, energy and transport in Germany's coalition treaty

al and mould it into legislative drafts before parliamentarians get the final say. Electricity generation from coal has long served German industry, supplied whole regions with jobs and wealth and, to date, remains a pillar of the country's energy supply.

"The [coal commission] deal shows responsibility for society as a whole and we want to live up to it."

Chancellor Angela Merkel (CDU)

#Energiewende #History

Energiewende – the first four decades

©[nullplus] iStock.

For many observers, the energy transition in Germany began with Chancellor Angela Merkel's decision to phase out nuclear power, following the accident at the Fukushima nuclear plant in Japan. But the societal project started decades before the Merkel government reinstated plans to exit nuclear power. A long process deeply rooted in German history and society led to policies that triggered a strong increase in renewable energy sources and are now at the heart of a move to a low-carbon economy. The Energiewende – a full-scale

"The renewable energy act sparked a real grassroots citizens' movement. Germans turned the Energiewende into their own project."

Nina Scheer, Social Democrats MP

transformation of society and the economy – arose out of enduring grassroots movements, evidence-based discourse, concern about climate change, and key technological advances, as well as hands-on experience garnered along the way in Germany and elsewhere.

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energytransition.de Timeline Energiewende

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#Grid

Success of Energiewende hinges on unblocking the power grid

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Germany must update its electricity network to handle the fluctuating supply of power from decentralised sources, while pursuing the shift to an integrated renewable energy system. The rapid expansion of wind power capacity in the north means a bountiful supply of low-cost electricity there. But too much power can be as big a problem for the stability of the grid as too little would be. Furthermore, not everyone is in favour of building new power lines to carry electricity to the country's industrial south. The debate revolves around the Energiewende's public acceptance, and it also centres on how the

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Germany's electricity grid stable amid energy transition

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How can Germany keep the lights on in a renewable energy future?

Volatile but predictable: Forecasting renewable power generation

Germany's renewable generation peaks remain shrouded in data fog

central government should work with the states to make this project a success. In 2019 the government wants to introduce a power grid acceleration law to make sure that enough of the large north-south lines are completed by the time the last nuclear power stations in the south are shut down in 2022.

"Germany's grid expansion is a marathon – and we don't just want to complete it but also finish in a good time."

Energy Minister Peter Altmaier (CDU)

#Transport

Car giant Germany struggles to spark Energiewende in transport

© Pixabay.

When it comes to the automobile, Germany has unique gravitas. But so far, the country has made little headway in creating a strong link between its transport system and the transition to renewable energy. While it is clear that extending the Energiewende to transport will be crucial in the country's quest for a low-carbon economy, emissions from the transport sector continue to rise. The high level of NOx pollution in cities, which has been linked to the Dieselgate affair, has led to the first diesel driving bans, and the uptake of

"Decarbonisation isn't happening anywhere in the sector. Measures are expensive and interfere with our daily life. Thus, it just hasn't been pushed by either politicians or industry."

Peter Kasten, Institute for Applied Ecology

electric vehicles has remained slow. But the government has started to tackle the thorny issue. It has set up a commission to ensure the sector meets highly ambitious 2030 climate targets, a move that has triggered a lively public debate on how to achieve them.

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Diesel driving bans in Germany – The Q&A

#Cars

BMW, Daimler, and VW vow to fight in green transport revolution

©[mirpic] Fotolia.

In Germany, the birthplace of the automobile, three iconic carmakers - BMW, Daimler, and Volkswagen - are facing the greatest challenge in their history: the mobility revolution that is turning the transport system green. Tarnished by the Dieselgate scandal and facing new and powerful competitors in Google, Tesla, Apple, and Uber, the future of Germany's horsepower-proud carmakers is less certain than ever, especially in this age of decarboni-

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"Dieselgate" – a timeline of Germany's car emissions fraud scandal

The debate over an end to combustion engines in Germany

The task force in charge of steering Germany to clean mobility

sation, self-driving vehicles, and carsharing. The carmakers have lobbied hard – and with some success – against stricter emissions limits, and they risk falling behind in the global competition in the field of battery technologies. But all three firms have now launched ambitious plans to switch to e-mobility, and experts say it is far too early to write off these automotive powerhouses in the global race to the future of mobility.

#Renewables #Wind #Solar #Bioenergy

Renewables are now Germany's No. 1 power source – but key challenges remain

© E.ON.

Since their launch on a large scale in the year 2000, renewables have become a cornerstone of Germany's power mix. Wind, solar and biogas plant manufacturers made up the heart of the growing German renewables industry, supported by generous feed-in tariffs. But their performance in recent years has been mixed. Once a global technology leader, Germany's solar sector suffered from increased competition abroad and declining expansion rates at home. Wind turbine manufacturers have

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German offshore wind power – output, business and perspectives

Environmental concerns accompany German offshore wind expansion

Tenant electricity – feeble start for Germany's 'Energiewende at home'

enjoyed a long expansion period, but a change in political conditions, intensified competition and rejection by parts of the population have led them to seek more independence from their home market. The biogas industry underwent a consolidation phase and is also looking for business abroad. But achieving the government's 2030 goal – 65 percent of power consumption supplied by renewables – could give the domestic market new momentum in years to come.

"Renewables are no longer just the better choice from an ecologic perspective, but also from an economic point of view." Economy and Energy Minister Peter Altmaier (CDU)

#EEG/Law

Renewables weather new auction schemes but face uncertainty in 2020s

©[Giso Bammel] Fotolia.

The German Renewable Energy Act (EEG), which established feed-in tariffs, is the mechanism that has made the energy transition possible. It guaranteed renewable energy producers high returns on investment, which in turn helped to bring down the costs of installing renewable generation capacity. In 2016, lawmakers deemed the sector to be mature enough to take the training wheels off

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Germany ponders how to finance renewable expansion in the future

EEG reform 2016 – switching to auctions for renewables

Defining features of the Renewable Energy Act (EEG)

"Economic logic and all experiences from other countries show: In tenders, the largest bidders have an advantage."

Lars Holstenkamp, Leuphana University

and expose it to market forces: they introduced tenders to determine payments to new renewable installations. These auctions have indeed lowered payments to large new installations. But the next challenge for renewable operators is already looming – how to deal with true market exposure after the first installations cease to receive feed-in payments altogether in the early 2020s?

#Nuclear phase-out

Managing the nuclear legacy – a project into the next century

©[Thomas Lehmann] iStock.

The question is no longer whether Germany's future will be nuclear-free – or even when, since the government is committed to completing the phase-out by 2022. But the logistics of pulling the plug on what was until recently one of the country's primary sources of power are proving an immense challenge. Legal hurdles, decommissioning technicalities, and above all, the question of where to store the radioactive waste, are the main issues at hand. In 2016, an agreement between plant operators and the state

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at least established financial clarity: In addition to paying for the decommissioning of their plants, operators will fund the disposal of nuclear waste with up to 23.6 billion euros. The rest of the yet unknown bill will be footed by taxpayers.

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Securing utility payments for the nuclear clean-up

Legal disputes over the nuclear phase-out

"In 2050, when the final repository is ready, I will be 98 years old. So I am not sure I will live to see it happen, but I certainly feel that it is my responsibility to organise this now."

Barbara Hendricks, Former Environment Minister (SPD)

#Industry #Jobs #Cost & Prices

German industry embraces transformation challenge

© Siemens AG, München/Berlin.

After balking at the Energiewende for many years, German industry is now fervently embracing the energy transition. There is no doubt that the efforts to curb climate change through a far-reaching shift to clean energy will produce winners and losers in the world's fourth largest economy – both among companies and regions. But businesses increasingly see profits in the move to a low-carbon future, and they also believe that the process benefits the economy as a whole. Many say that now is the time for Germany

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to ensure that it remains a global economic powerhouse – not by shunning the Energiewende, but by harnessing its innovative momentum. This includes industries barely involved in the transformation (yet), such as steelmaking and cement.

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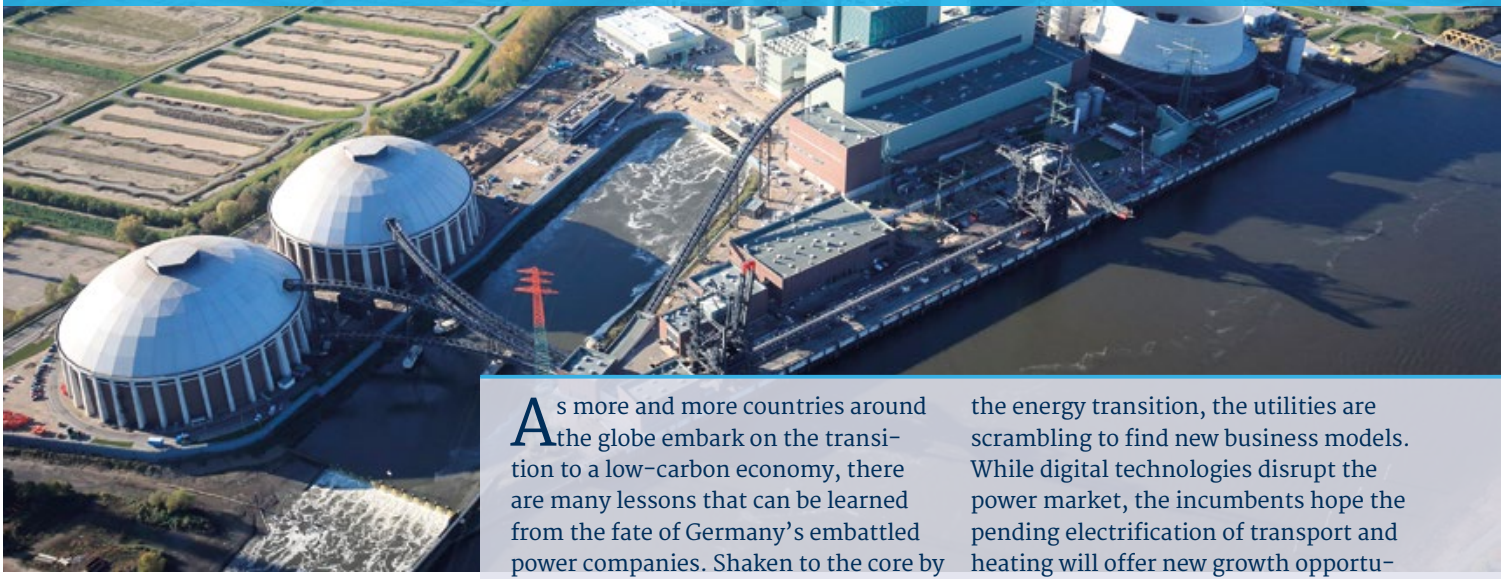
How much does Germany's energy transition cost?

"The Energiewende will turn the German economy inside out."
Achim Wambach, President of the Centre for European Economic Research (ZEW)

#Utilities

Battered utilities take on start-ups in innovation race



©[Bengt Lange] Moorburg Power Plant 11, Vattenfall.

As more and more countries around the globe embark on the transition to a low-carbon economy, there are many lessons that can be learned from the fate of Germany's embattled power companies. Shaken to the core by the energy transition, the utilities are scrambling to find new business models. While digital technologies disrupt the power market, the incumbents hope the pending electrification of transport and heating will offer new growth opportu-

"Traditional power companies have become obsolete."

Philipp Schröder, CEO Sonnen

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nities in the Energiewende's next phase. In the innovation race against agile new players, the overhaul of the former monopolies is far from over – as evidenced by the landmark asset swap of former market leaders RWE and E.ON.

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Small, but powerful: Germany's municipal utilities

Securing utility payments for the nuclear clean-up

#Electricity market

Power market between competition, flexibility, supply security

© [NicoElNino] Fotolia.

How will Germany organise the market around the ever-increasing share of renewable energy? What happens to energy security when the sun doesn't shine and the wind doesn't blow? Fluctuating electricity production with near zero operational costs poses a challenge to the grid and to market design. In its most recent power market overhaul, the German government opted to stick with the generation cost-oriented 'energy-only' market, and avoided a full-on capacity market. With a coal exit in the making and rising prices for European carbon emission allow-

"We don't believe that there will be incentives for investors to build new, flexible power plants that will be needed in Germany to accompany the expansion of renewable energy."

Frank Brachvogel, BDEW

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ances, experts are divided over how electricity markets will react. Calls on the government are getting louder to reform the system of taxes and levies on power and adjust the rules to incorporate new actors, such as storage and flexibility providers, into the power market.

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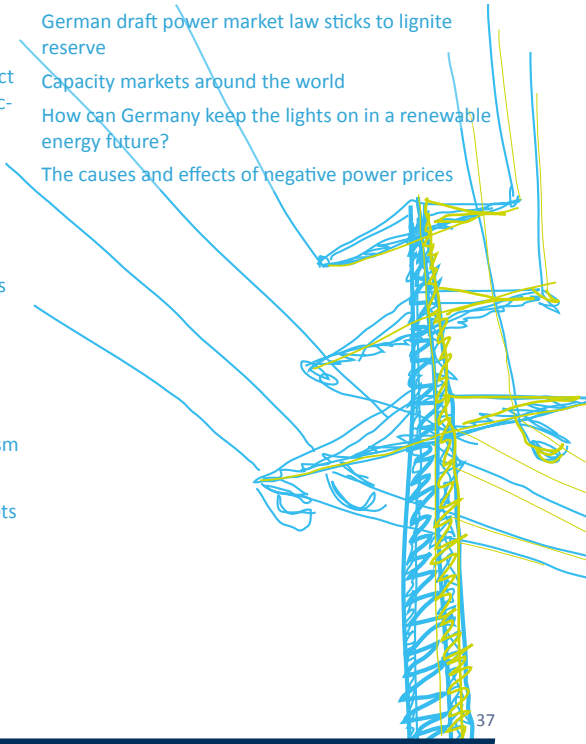
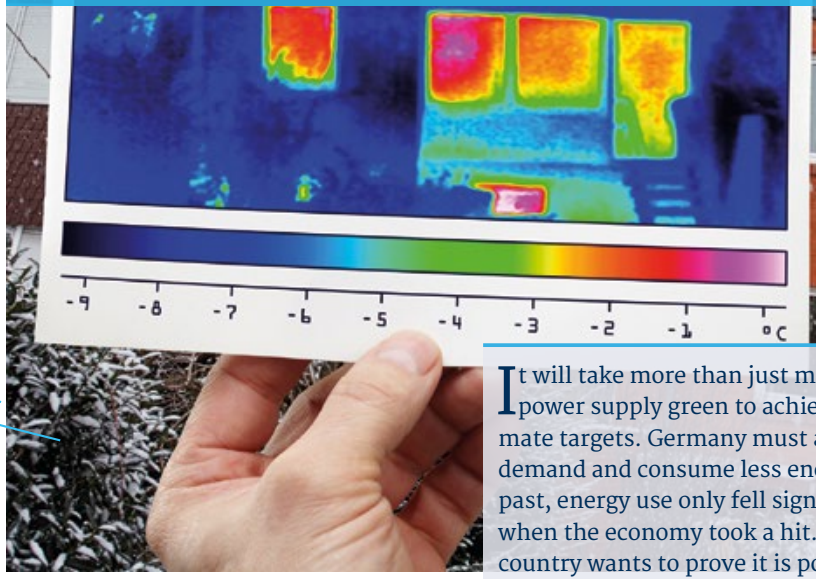


#Efficiency

Taming the appetite for energy



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It will take more than just making the power supply green to achieve climate targets. Germany must also tackle demand and consume less energy. In the past, energy use only fell significantly when the economy took a hit. Now the country wants to prove it is possible to decouple growth and emissions permanently by dramatically increasing efficiency. The potential is huge and so far largely untapped, which is why efficiency has been dubbed the "sleeping giant" of the Energiewende. According to the government, increasing energy efficiency

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Germany's greenhouse gas emissions and climate targets

Combined heat and power – an Energiewende cornerstone?

Energy use in the city of Berlin

could bring more emissions cuts than any other measure. But saving energy on a large scale – by insulating buildings, changing behaviour and introducing many new and often expensive technologies – requires everyone's participation and has proven a hard sell so far.

"Germany can achieve its emissions targets much faster if energy is used more efficiently."

Robert Pörschmann, BUND

#Finance

Making the financial sector more sustainable

©[Marina Lohrbach] Fotolia.

The financial industry is a growing area of interest for climate activists in Germany and beyond. In its role as a facilitator of virtually all other sectors of the economy, the financial sector plays a key part both in financing the spread of low-carbon technology and in decreasing investor reliance on fossil fuel extraction. The EU wants to make the financial sector more sustainable in 2019 by introducing joint standards for investments that take environmental or social consequences into account. At the same time, Germany is aiming to become an international hub for green and sustainable investments. A powerful alliance of

"Basically, sustainable finance amounts to nothing less than good risk management."

Joachim Faber, chairman of Deutsche Börse's advisory board

banks, financial research institutions, the German stock exchange and other influential actors have joined forces to promote the idea. They are backed by a wealth of academic research that has debunked the common misconception that sustainable investments are less profitable for investors.

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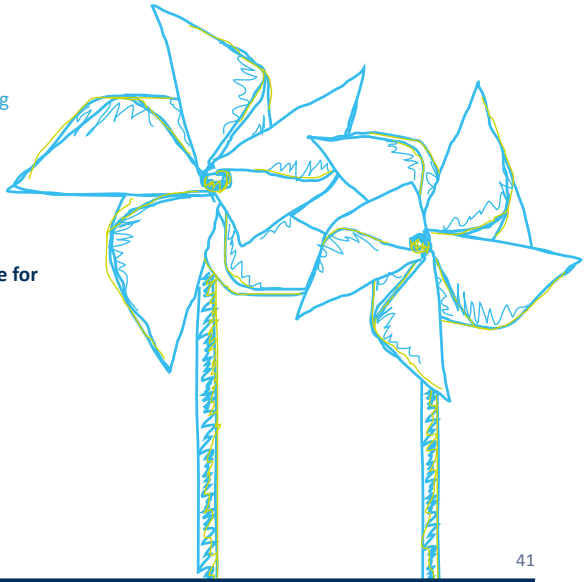

#Citizens' Energy #Society

Citizens' energy versus NIMBYism

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Since the launch of the energy transition process in 2000, millions of Germans have become energy producers, investing in solar panels on their houses and buying shares in wind parks. Citizen engagement has been key to maintaining a high level of public support for the energy transition despite rising power prices. The changes and their knock-on effects don't please everybody though: inevitably, there are winners and losers when a society and economy undergo such sweeping changes. While some readily jump aboard and transform their homes into small solar power stations, others take

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Polls reveal citizens' support for Energiewende

Fighting windmills: When growth hits resistance

What German households pay for power

the NIMBY ('not in my backyard') approach or oppose wind and solar farms out of aesthetic, environmental and health concerns. Important Energiewende projects – such as the extension of the grid and the installation of wind parks – have run into resistance, requiring new ways to keep the public on board.

"If people participate with their own money, for example in a wind or solar power plant in their area, they will also support it." Manfred Fischedick, Wuppertal Institute

#Agriculture

The wicked task of feeding 83 million in a climate-friendly way

© Pixabay.

No matter how you look at it, people need sustenance to survive – and growing crops or raising livestock creates emissions. But Germany must find a way to reduce its agricultural emissions, which make up seven percent of total greenhouse gas emissions, to reach its goal of becoming largely carbon-neutral by mid-century, and to comply with the Paris Climate Agreement. It is difficult to know which measures will be most effective, as

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Must Germans give up sausage and schnitzel to cut agri-food emissions?

"Demonizing global trade" no fix for agri-food emissions

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Climate impact of farming, land use (change) and forestry in Germany

cutting emissions in one area often creates emissions in another. Measures aimed at protecting the environment while also combatting climate change may seem like the perfect match, but they often harbour conflicts of interest.

"Farmers' willingness to operate in a more climate-friendly way is high – if politicians provide for the necessary rules and rewards."

Harald Grethe, professor for international agriculture trade and development HU Berlin

#Technology #Storage

Technology to transform the energy system – Made in Germany

©[WEMAG AG] Batteriespeicher Schwerin Akkuhalle.

Germany's energy transition anticipates a vastly more efficient and interconnected energy system in the future, transforming the country into a testbed for innovation. The shift to renewables poses huge technological challenges – and challenges for legislation and business models to keep pace. German businesses and researchers say their work has already made important contributions to the global goal of decarbonisation. Batteries that can store power and help to regulate the grid within seconds with high accuracy,

"The energy transition in Germany is entering a new phase. While the first phase was dominated by technology development in the renewables sector, the second step will focus on the energy system as a whole."

Tobias Sontheimer, Chief Research Manager for Energy at the head office of the Helmholtz Association of German Research Centres

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smart grids and other solutions for flexibility, and integration of different power sources are key to adapting the power system to a high percentage of renewables. Germany has doubled research and development funds in under a decade.

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Digitalisation ignites new phase in energy transition

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Lack of CO_2 price is killing energy innovation – German government advisors

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Blockchain – the next revolution in the energy sector?

How can Germany keep the lights on in a renewable energy future?

Sector coupling – Shaping an integrated renewable energy system

Germany's Siemens: a case study in Energiewende industry upheaval

#Gas

Natural gas – fossil bridge to a renewable energy future?

© Nord Stream 2.

The long-term future of natural gas in Germany seems all but sealed as Europe's biggest economy will have to virtually phase out all fossil fuels to become largely climate neutral by 2050, in line with its own targets and the Paris Climate Agreement. Today, however, the gas industry positions itself as a cleaner alternative to oil and coal, highlighting its potential for short-term emissions savings in heating, power production, industry, and transport. The government says gas will be needed for many years to come and continues to back the contro-

"By transforming renewable power into gas, peak power supply by renewables can be transported and stored easily in today's pipelines and gas stores. The existing gas infrastructure could therefore become the battery of the Energiewende."

Timm Kehler, Executive Director of gas industry initiative Zukunft ERDGAS

versial Russian-German Nord Stream 2 pipeline project, and promises financial support for the country's first liquefied natural gas (LNG) import terminal. Gas companies also promote flexible gas-fired electricity generation as the perfect partner for fluctuating renewables – a bridging technology for the energy transition. In the longer run, experts believe the sector will only have a future in power-to-gas technology, which many see as the ultimate solution to long-term renewable energy storage needs when there is too little wind or sun.

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Gas pipeline Nord Stream 2 links Germany to Russia, but splits Europe

Sector coupling – Shaping an integrated renewable energy system

#Cities #Urban planning

Energy transition to transform German cities

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German cities, counties and municipalities all have their role to play in the Energiewende. With the shift to a decentralised energy system, renewable power is increasingly generated in, and often owned by, local communities. Urban centres are where much of the country's energy is distributed and consumed. And as the energy transition expands its focus from the power sector to heating, buildings and mobility, population centres will be where crucial changes take place.

Germany will only meet its climate targets if municipalities implement their own energy transitions – which can also bring economic benefits. They have opportunities to take different paths but

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must also overcome local challenges. Germany's municipalities, many of which are chronically underfunded, must negotiate the complex interplay between EU, federal, and state structures that set overarching goals and provide funding, in order to apply their own ideas, agency, and expertise to shape their own green future.

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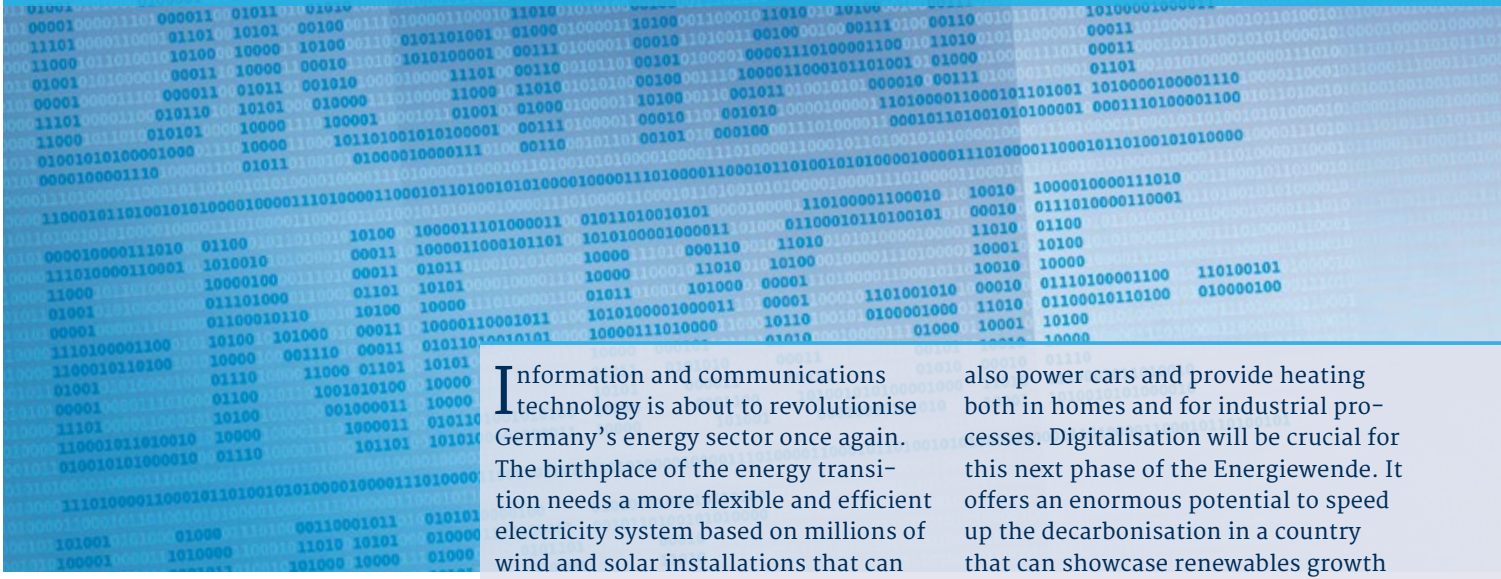
Efficiency gains make eastern German city Energiewende frontrunner

#Digitalisation

Digitalisation triggers new phase in energy transition



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Information and communications technology is about to revolutionise Germany's energy sector once again. The birthplace of the energy transition needs a more flexible and efficient electricity system based on millions of wind and solar installations that can also power cars and provide heating both in homes and for industrial processes. Digitalisation will be crucial for this next phase of the Energiewende. It offers an enormous potential to speed up the decarbonisation in a country that can showcase renewables growth

"There is no doubt that digitalisation will take the energy transition to an entirely new level."

Robert Spanheimer, bitkom

as a success story but lags behind in cutting emissions from the transport and industry sectors. But the technology shift will upend many existing business models, and it will inevitably raise concerns about data privacy and the risk of cyberattacks.

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#International #Energy Union #Security

Energiewende impacts EU neighbours and shapes foreign policy

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Germany's energy transition began as an isolated project, but has quickly impacted markets in neighbouring countries. The country had to learn that it cannot achieve its goals alone and must cooperate in areas such as power grids, trade, and research. Energy is also inseparable from German foreign policy beyond the EU, as the country and continent still rely heavily on imports to feed their energy appetite. Germany's shift to renewables will loosen these ties, with uncertain consequences for international security. During the transition, the ongoing dispute over the Russian-German Nord Stream 2 gas pipeline, under construction

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in the Baltic Sea, is putting a strain on relations with European neighbours and the US. The implications of a low-carbon future reach well beyond questions of supply security. If Germany is to make its energy transition a success, it could have profound geo-political repercussions across the globe.

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Our team in Berlin is available to support journalists in their work. CLEW assists with research, provides background and helps to find experts and politicians to speak with.

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