

Germany's Shift to Green Power Stalls, Despite Huge Investments

By Stanley Reed

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BETZIGAU, Germany — Katharina Zinnecker's farm in the foothills of the German Alps has been in the family since 1699. But to squeeze a living from it today, she and her husband need to do more than sell the milk from their herd of cows.

So they carpeted the roofs of their farm buildings with solar panels. And thanks to hefty government guarantees, what they earn from selling electricity is “safe money, not like cows,” Ms. Zinnecker said. “Milk prices go up and down.”

The farm has been a beneficiary of “Energiewende,” the German word for energy transition. Over the past two decades, Germany has focused its political will and treasure on a world-leading effort to wean its powerful economy off the traditional energy sources blamed for climate change.

The benefits of the program have not been universally felt, however. A de facto class system has emerged, saddling a group of have-nots with higher electricity bills that help subsidize the installation of solar panels and wind turbines elsewhere.

Germany has spent an estimated 189 billion euros, or about \$222 billion, since 2000 on renewable energy subsidies. But emissions have been stuck at roughly 2009 levels, and rose last year, as coal-fired plants fill a void left by Germany's decision to abandon nuclear power. That has raised questions — and anger — over a program meant to make the country's power sector greener.

This lack of progress is an “illustration of the partial failure of the energy transition,” said Artur Lenkowski, an energy analyst at IHS Markit, a research firm. “The whole point of the energy transition was to lower greenhouse gas emissions.”

Now, Energiewende is at a crossroads. Chancellor Angela Merkel may have won a fourth term as Germany's leader after elections last month, but her party lost sway. She must form a coalition with the left-leaning Greens and the pro-business Free Liberals, parties that have diametrically opposing views, including on environmental policies.

How such a diverse group comes together will affect whether Germany reaches its goal for carbon emissions. It wants a cut of 40 percent, compared to 1990 levels, by 2020, and of 95 percent by 2050.



Wiepoldsried generates about seven times as much energy as it consumes, and the surplus is sold to the grid. Corinna Kern for The New York Times

The clean energy movement has deep roots in Germany.

Alternative sources of electric power are flourishing in the Allgäu, a region of rolling pastures, pine forests and domed churches that is home to Ms. Zinnecker's family-owned farm.

In Wildpoldsried, a village of 2,600 a short drive from the farm, around €40 million has been invested over the years — much of it by residents — into an array of renewable power sources and improvements in energy efficiency. The brightly painted, wood-trimmed houses are heated cheaply by generators fueled by methane gas from cow manure, and wind turbines nearly 500 feet tall provide electricity from the hillsides.

Günter Mögele, Wildpoldsried's deputy mayor and energy coordinator, said that the village's decision in the late 1990s to focus on renewable energy had paid off.

Overall, the village generates about seven times as much energy as it consumes, and the surplus is sold to the grid. The income from solar panels on public buildings is fed back into the public purse. It is often doled out to subsidize residents' shifts to green power, and to reduce fees for the local music club and sports facility.

But renewable energy subsidies are financed through electric bills, meaning that *Energiewende* is a big part of the reason prices for consumers have doubled since 2000.

These big increases “are absolutely not O.K.,” said Thomas Engelke, team leader for construction and energy at the Federation of German Consumer Organizations, an umbrella organization of consumer groups.

The higher prices have had political consequences.

The far-right party Alternative for Germany, which won enough support in the recent elections to enter Parliament, has called for an “immediate exit” from *Energiewende*. The party, known by its German initials AfD, sees the program as a “burden” on German households, and many supporters have come into its fold in part because of the program's mounting costs.

Julian Hermneuwöhner is one such voter. Mr. Hermneuwöhner, a 27-year-old computer science student, said his family paid an additional €800 a year because of Energiewende.

“But it hasn’t brought lower CO₂ emissions,” he said. “It’s frustrating that we’re paying so much more, because the country hasn’t gotten anything for it.”

As a clean energy pioneer, Germany has not always seen the results it desired from its heavy spending.



Katharina Zinnecker and Norbert Bechteler at their farm in Betzigau, Germany. Income from their solar panels is “safe money, not like cows,” Ms. Zinnecker said.

Corinna Kern for The New York Times

For instance, the country has focused on cleaning up electric power generation, with some success. About one-third of German electricity now comes from renewable sources, a fivefold increase since 2000. In the United States, that figure was about 15

percent last year. Britain generates about a quarter of its power from renewables, and France about 19 percent.

But that progress has been undone somewhat by the government's decision to accelerate its phase out of nuclear power after the 2011 disaster in Fukushima, Japan. That has made the country more reliant on its sizable fleet of coal-fired power stations, which account for the bulk of emissions from electricity generation.

The country has yet to address the transport industry, where emissions have increased as the economy boomed and more cars and trucks hit the road. Unlike Britain and France, Germany has not set a date to end the sale of diesel and gasoline cars.

Recent political experience does not bode well for Germany. The so-called grand coalition between Ms. Merkel's Christian Democrats and the Social Democrats, which governed from 2013 until the recent elections, was bogged down with so many competing interests that it was unable to push ahead on energy policy.

Advocates of *Energiewende* charge that Germany is in danger of falling behind rivals like China and the United States in the potentially vast, and fast-growing, business of developing and exporting clean-energy technologies. And without new direction, they say, the country will most likely fail to meet its carbon emissions targets.

How the government comes to terms with these problems will be crucial for the sector and for consumers.

Germany has already moved to bring subsidies under control. In particular, it has driven down costs by introducing an auction system for new renewables projects — though it is still on the hook for subsidy payments for the 20-year life of existing projects.

A bigger issue may be that Germany has already taken some of the easier steps in its energy transition by making industry more energy efficient and building up renewables.

Further progress will require taking on tougher targets. That would mean challenging the politically powerful auto and coal industries, including unions and companies, that have opposed plant shutdowns.

“Some of the low-hanging fruit might be gone now,” said Tim Boersma, a senior research scholar at the Center on Global Energy Policy at Columbia University. “It is becoming clear how challenging making this overall transition is.”

Correction: October 10, 2017

A picture caption on Saturday with an article about challenges facing Germany’s clean energy industry misspelled the surname of a farmer in Betzigau, Germany, who, with his wife, has installed solar panels on his property. He is Norbert Bechteler, not Bechtelier.

Edmund Heaphy contributed reporting from Berlin.

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