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Germany shows how shifting to renewable energy can backfire

BY RANDY T SIMMONS AND JOSH T. SMITH, OPINION CONTRIBUTORS — 01/17/18 05:00 PM EST
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Christmas Eve in Germany brought an extra bit of joy to some — utilities paid customers to use electricity rather than the other way around. When there is too much supply, those producing the power will pay others to use it.

This phenomenon of negative electricity pricing isn't unheard of in the United States — both Texas and California experience it as well. Why though, don't suppliers simply respond to negative prices by turning off their generators? In many cases, it's because of poorly thought-out government energy policy that generates minimal environmental benefits at the expense of the poor.

Germany is often used as the standard to judge other countries' actions on climate change. It began creating aggressive environmental policies pushing renewable energy more than 20 years ago. Its policies are often referred to as Energiewende, which is German for “energy transition.” For example, Germany's feed-in tariff, first created in 1991, essentially provides a payment above the market rate for using renewable energy and thus guarantees a profit for the renewable energy industry.

Energiewende has come with high costs, however. Estimates of the total cost over the last 20 years are usually around \$200 billion. With about 80 million Germans over that same time period, each paid about \$2,500 dollars in taxes to fund these programs.

The Christian Science Monitor, for example, reported that the average German household paid \$171 for just the feed-in tariff in 2011. These expenses are on top of the record breaking high electricity prices in Germany — some of the highest in the world compared to similar countries like the U.S. and the U.K.

High energy costs are particularly harmful for the poor since they tend to spend a greater proportion of their income to meet their energy needs. One analysis of U.S. energy consumer expenditures published in the economics journal Public Choice looked at the differences between low-income and high-income individuals. The researchers found that U.S. low-income consumers spend 85 percent more on electricity as a percentage of total expenditures than high-income consumers.

The European Bank expressed similar concerns for low-income Europeans in a working paper they published in 2005. And the European Commission's energy think tank, Insight E, published a paper in 2015 that recommended increasing the requirement to analyze the impact of energy policies on the poor.

The regressive effects of energy policy and the ways that well-intentioned environmental policies have actually contributed to energy poverty, meaning it made it harder for the poor to heat and power their homes, is an underappreciated area of debates around the transition from fossil fuels to alternative energy sources. Policymakers around the world ignore it at the peril of “greening” the economy on the backs of the poor.

Although extremely expensive, Germany's Energiewende did lead to an explosion of renewable energy technologies being installed. That might sound like a huge success for anyone concerned about the environment, but it has its own unintended consequences.

More renewables connecting to the electrical grid also entail a technical challenge of balancing the supply they create with the demand. This is because the renewables added to the grid are not dispatchable, which simply means that they can't be ramped up or down with demand.

Solar panels produce when it's sunny and wind farms produce when it's windy. Grid operators rely on weather forecasts to account for this, but the inherent variability of wind and solar still create problems like negative pricing.

Mismatching supply and demand isn't the only problem that variable renewables create - there are also environmental costs. As energy policy expert Richard Martin of the MIT Technology Review wrote last year of Germany's renewable energy policy, “after years of declines, Germany's carbon emissions rose slightly in 2015, largely because the country produces much more electricity than it needs.”

Germany has to produce extra electricity in part because the wind might flag or clouds might obscure the sun. If that happens and there aren't other sources that can be ramped up running in the background, the grid fails and creates blackouts.

Usually, the sources kept running as a safeguard against grid failures caused by calming winds and clouds are dirty energy sources like coal. In fact, since Germany has been phasing out much of its nuclear power they're left with few options other than coal.

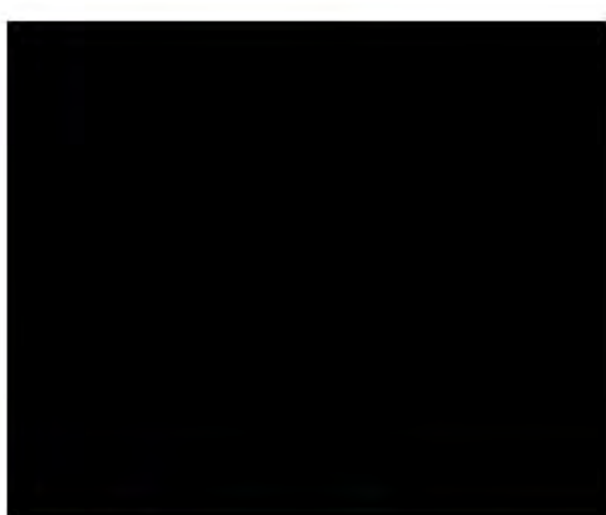
Thus, Energiewende has required that Germany build more coal fired electricity plants; 10 gigawatts worth in the last several years. In sum, despite Germany's expensive and exuberant renewable energy support, they aren't even achieving their supposed goal of lowering carbon emissions. This is true even though renewables make up about 40 percent of Germany's total electricity supply.

Negative electricity pricing is driven, at least in part, by the aggressive energy policies taken up by governments that spurred huge increases in renewable energy deployment.

At first glance, this appears to be a boon to the environment and consumers who are paid to use electricity. A closer look, however, reveals that negative prices do neither of these things. Instead, negative prices come at the expense of both the environment and the average taxpayer. Policymakers in Germany, and other countries taking action on climate change, should reconsider their energy policy and grapple with its actual effects on the poor and the environment.

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