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The Coming German Energy Crisis

An overcommitment to renewables has already had negative consequences.

Marian Tupy

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Recently, I came across a report by Fritz Vahrenholt, Professor in the Department of Chemistry at the University of Hamburg, entitled Germany's Energiewende: a disaster in the making. It made for interesting reading.

In the aftermath of the Fukushima disaster in 2011, the German government decided to shut down its 19 nuclear power stations, which supply nearly 30 percent of the country's electrical power, by 2022. Driven by social pressure, the German government now plans to get rid of all fossil fuels, thus increasing the share of renewable energy to 95 percent of total energy supply by 2050.

To accomplish its goal, the government has introduced a "renewable" levy on power bills, thus doubling the price of electricity. This additional cost amounts to €25 billion ($26.8 billion) annually. In a nod to rationality, the government has exempted energy-intensive industries (steel, copper and chemicals) from the renewable levy, thus maintaining their competitiveness.

There have been no blackouts so far, Vahrenholt argues, because of "typical German over-engineering of its grid, which was set up with a very wide safety margin. Even if a power line or a power station fails, the power supply remains secure, at least for now."

Moreover, Germany has nine neighbors with whom power can be exchanged. Surplus can be sold to the neighbors' electricity grids on sunny or windy days. In return, Austrian oil-fired power stations, Polish coal plants, and French and Czech nuclear power stations, provide stability when German renewables fall short.

This is a situation unique to Germany. If the Energiewende were to happen in the UK, for example, the electricity system would have imploded already. As things stand, there is currently no political party in Germany that opposes the Energiewende in parliament.

Nevertheless, the report argues, a crisis is coming. The problem with German drive toward renewable energy is not capacity, but intermittency. If for example the capacity for wind energy were to triple, then there would be a huge oversupply of wind energy on windy days and an energy shortage when there is no wind.

One way to cope with this volatility is to establish a backup system based on fossil fuels with dramatic economic and environmental consequences. Alternatively, the government could dramatically expand the nation's energy storage capacity, but the needed technologies are still prohibitively expensive.

Furthermore, wind parks and other renewables sometimes oversupply energy so much that they have to be temporarily taken off the grid. Yet the producers still get paid under German law—even if they produce no energy whatsoever. The cost of this particular scheme amounts to €1 billion per year.

Even so, the oversupply sometimes becomes so large that the price for energy turns negative and Germany has to release its excess power onto the grids of neighboring countries and pay for them to take it!

Also, wind is more abundant in the north of Germany than in the south. As such, according to the report, a "total of 6100 km of cable will have to be built by the time the last nuclear power stations shut in 2022. 400 km have been given the go-ahead and 80 km have been built, just 1.3% of the intended total. The government underestimated the opposition that their plans would meet. Building power lines on this scale has brought protests like those against nuclear power in the past."

Renewables are also the most land-demanding form of energy generation, threatening biodiversity in Germany. Transforming grassland into corn monocultures to produce bio fuel and the increase of wind turbines has led to an appalling reduction of songbirds and bats in Germany.

If Angela Merkel, the German Chancellor, wins this year's election, she might wish to continue on the current course towards economic disaster, because a serious move away from the Energiewende would be seen as an admission of a mistake. If she is defeated, the new government might find it convenient to opt for a policy correction. In either case, it will take a long time to repair the serious damage caused by the current German energy policy.

Marian L. Tupy is a policy analyst at the Cato Institute's Center for Global Liberty and Prosperity and editor of ***www.humanprogress.org***