Wind Turbines Clutter the North German Countryside

By Steve Goreham

Originally published in *The Washington Times*

Earlier this month, my wife and I toured the scenic German countryside of Schleswig-Holstein. We drove northwest from Hamburg, the largest city in the North German Plain, to St. Peter-Ording, a small resort town on the North Sea. We traversed fields of sheep and cattle, vegetables, corn, and grain, and passed historic towns of quaint homes with thatched roofs. But towering over all was a vast number of giant wind turbines.

Thousands of wind turbines have been erected in northwest Germany to capture winds blowing in from the North Sea. Almost 23,000 wind turbines operated in Germany at the end of 2012, with more than 10,000 located in Schleswig-Holstein and Lower Saxony, the two states bordering the North Sea. Germany now has half the wind turbines of the United States, in an area much smaller.

These wind turbines dominate the countryside. Most reach more than 400 feet into the sky, taller than the Statue of Liberty. Newer, larger turbines stand more than 550 feet high to the top of the blade, higher than the Washington Monument. High voltage towers add to the disfigurement, constructed to transport electricity to populated areas of central and south Germany.

The turbines are part of Energiewende (Energy Transition), the German federal government's plan to move the economy from hydrocarbon and nuclear energy to renewable energy. Renewables share of energy consumption climbed from 3.9 percent in 2000 to 12.6 percent in 2012. The plan calls for renewables to achieve a 30-percent share of energy usage by 2030 and a 60-percent share by 2050. Energiewende is an effort to reduce greenhouse gas emissions in an attempt to stop man-made global warming.

But all is not well with the Energiewende. According to figures from the German Federal

Ministry, the 22,962 wind turbines operating at the end of 2012 provided only 7.3 percent of the nation's electricity and about 1.8 percent of the nation's energy consumption. Despite the location of many turbines on the windy North Sea, German wind turbines operated at a capacity factor (actual output vs. rated output) of only 17 percent in 2012.

The low capacity factor of German wind turbines makes wind electricity expensive. Driven by increased costs from renewables, household electricity rates almost doubled from 13.9 eurocents per kilowatt-hour to 26.0 eurocents per kilowatt-hour from 2000 to 2013. Today, Germany has the second highest electricity rates in Europe, more than triple U.S. electricity prices.

Wind energy generation receives major advantages from the German government. Land-based wind electricity is guaranteed a feed-in tariff that is double the wholesale rate of electricity and offshore wind gets more than three times the wholesale rate. Utilities charge the difference between the feed-in tariff and the wholesale rate to consumers in the form of the Renewables Surcharge, which exceeded 5 eurocents per kilowatt-hour in 2013, a subsidy equaling 20 percent of the residential electric bill.

Law requires grid operators to purchase all wind electricity produced at high fixed prices, even when consumer demand is low. When wind and solar output is high, operators dump excess power onto the grid, which depresses the wholesale price, even to negative levels. Natural gas plants have been reduced to a role of part-time backup for wind, making them unprofitable. Utilities E.ON and RWE have announced plans to close many hydrocarbon power plants that have recently become money-losers.

At the same time, Germany is boosting coal-fired electricity production. Electricity from coal-fired plants provided 44.7 percent of Germany's electricity in 2012, up from 43.1 percent in 2011. Coal-fired plant output is expected to rise again in 2014 to replace declining output from nuclear plants that the German government decided to shut down after the Japanese Fukushima disaster in 2011. Due to the coal-fired ramp up, German greenhouse gas emissions rose in 2013 and will rise again in 2014.

So what has Germany gained by cluttering their idyllic countryside with wind turbine towers? Despite the recent rise in greenhouse gases, Germany's CO_2-equivalent emissions have declined about 25 percent since 1990. If we accept the climate model-predicted rise in global temperatures of 3^oC for a doubling of CO_2, the small German emissions decline will reduce global temperatures by a microscopic 0.002 degrees Celsius by the year 2100.

As Winston Churchill said, "However beautiful the strategy, occasionally you should look at the results."

Steve Goreham is Executive Director of the Climate Science Coalition of America and author of the new book *The Mad, Mad, Mad World of Climatism: Mankind and Climate Change Mania.*