

What happens when there is no wind ?

This is an article the Telegraph asked me to write for their publication:

For more than a decade I have been asking Energy Ministers how do we keep the lights on when the wind does not blow? There has been an almost universal enthusiasm to finance more windfarms. We were told we would get more than half our power from renewables. The stated capacity of UK wind turbines is over 25 GW, which compares to demand on a cold day of a little over 45 GW.

This autumn and winter we have lived through periods of little wind, when the wind electricity output can be as low as 1% of our total needs despite having theoretical capacity for many times that. I have been repeating my question. If low wind coincides with dark evenings and mornings when there is no solar power the grid has turned to maximising output from gas generators. It has had to call up the few older coal stations that managed to avoid the passion to demolish them.

I have usually been told that the UK will import any extra energy it needs if there is a cold snap with little wind. The Regulators and the industry rushed to put in more interconnectors to the continent so we have that flexibility they promised.

I remonstrated that we cannot rely on an energy short Europe if we run out of power. Most of the continent has no domestically available gas or oil, and was dependent on Russian imports which always contained a political risk. Unfortunately the violent conduct of Russia this year has led to an early ban on the imports that sustained Germany and Italy, leaving the EU trying to cut energy use to match the shortfall in supply. Relying on imports means paying very high prices.

There have always been problems with adding too much wind power to our system. Much of the wind power is best generated offshore in Scotland where there is availability and on good days more wind. This needs an enlarged high voltage network to bring it south to where it can be consumed, with losses along the way. Too much interruptible renewable power on the system makes balancing the grid more difficult, with more need for back up generation that can be available almost instantly if the wind drops. Relying on European imports does not work when the EU is also experiencing a cold period with little wind, especially if enough of the ageing French fleet of nuclear power stations continue to struggle to stay open.

Import dependence is also bad in other ways. It means exporting well paid jobs. It means paying large taxes on energy away to a foreign Treasury instead of keeping them at home to pay some of the NHS bills. It gives the UK less control over energy when there are supply constraints that need managing. When electricity was first privatised there were three aims of policy. The first was to ensure

security of supply, with the industry and regulators ensuring a useful surplus over normal maximum demand from domestic stations. This was seen to be an important part of our national security. The second was affordable power, by developing a system which always used the cheapest power available. The third was environmental. In the first decade after privatisation the industry made huge advances, replacing coal stations where only around a third of the underlying energy emerged as electrical current with gas fuelled combined cycle stations that improved energy efficiency by more than half, allowing cheaper prices and a much cleaner output. There was plenty of margin for cold days when something went wrong with a power station or two.

The government has wisely said it is going to make national security of supply a main aim again. To do so it needs to recognise that will require plenty of stand by power for when the wind does not blow. In due course we may find that investment in battery storage on a huge scale allows us to keep electricity from windy days to manage windless ones. We may find there is a commercial roll out for the widespread use of green hydrogen , generating more lasting power from wind electricity. Until that happens we need to rely on power stations that do work when the wind does not blow and the sun does not shine.