

## Discussion: Nuclear is not a stand-alone option

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The title of the briefing does not reflect the content which is as much about wind as it is about nuclear power.

The conclusion, that reliance solely on a combination of nuclear and wind power to provide electrical power for the nation is a recipe for disaster, is something with which most observers would agree. It is, however, contrary to the statement made in the body of the briefing that if 180 GW of wind power was to be spread evenly around the UK it would dispense with the need for any fossil fuel power plants. Surely, if this is the case, then a base load of nuclear power could exist alongside wind power and all existing fossil fuel plants could be phased out?

The briefing makes the case that nuclear is not a stand-alone option. When one or more units are shut down for repair or maintenance fossil plant is required to be brought on-line. Complete fossil plant backup is required if all the nuclear plant is taken out of service or if only a few, say two or three units, are connected to the grid.

This argument can also be made for wind power.

On 24 June 2008, the 'Latest Observations' published by the Met Office for 1000 hours indicated that out of a total of 117 observation stations located all around the UK, from the Shetlands to Lands End, the highest recorded wind speed was 18 mph (8 m/s) at Glen Ogle in central Scotland and the average wind speed across the UK was 8.3 mph (3.7 m/s). At the same time the wind speed recorded by each of two bouys in the North Sea off the north-east coast of Norfolk was 9 mph (4 m/s).

Using Fig. 7 of the Sustainable Development Commission's report *Wind Power in the UK*,<sup>1</sup> dated May 2005, a simple calculation shows that if 180 GW of wind capacity was spread equally around the UK, between the 117 observation points, and the wind speed at each location was to be used to calculate the output at each location, the total UK wind power output would have been in the order of 4.8 GW. If all the 180 GW was located in Glen Ogle, which is not feasible, the output would have been 54 GW. Also, if all the 180 GW was sited in the North Sea, the output would have been less than 2 GW.

On the same day at 0942 hours the demand on the National Grid was 41.7 GW.

The above example is not a freak occurrence. Every year there are several days during which the wind strength over the whole of the UK is low and not sufficient to generate any significant electrical power.

The premise that 180 GW of wind power is a stand-alone option and can enable the UK to dispense with fossil fuel entirely does not seem to be correct. Controversially, one might even go further and state that for every megawatt of wind power there needs to be an equivalent megawatt of fossil power to back it up.

### REFERENCE

1. SUSTAINABLE DEVELOPMENT COMMISSION. *Wind Power in the UK*. Available at [www.sd-commission.org.uk/publications/downloads/Wind\\_Energy-NovRev2005.pdf](http://www.sd-commission.org.uk/publications/downloads/Wind_Energy-NovRev2005.pdf).