

Sorry, but wind and solar not sustainable

Clean green nuclear reactors are the only option, says Colin Keay.

RENEWABLE. Sustainable. These are the buzz words in the energy debate. They are like holy writ to those subscribing to the small is good philosophy in the contentious matter of energy production.

The Prime Minister has entered the fray by supporting nuclear power as the cleanest base-load power option. He marginalised wind and solar power, angering their many supporters.

There is most certainly a place for wind and solar power in small, localised applications, especially where sufficient energy storage is available to overcome their inherent on-again off-again intermittency.

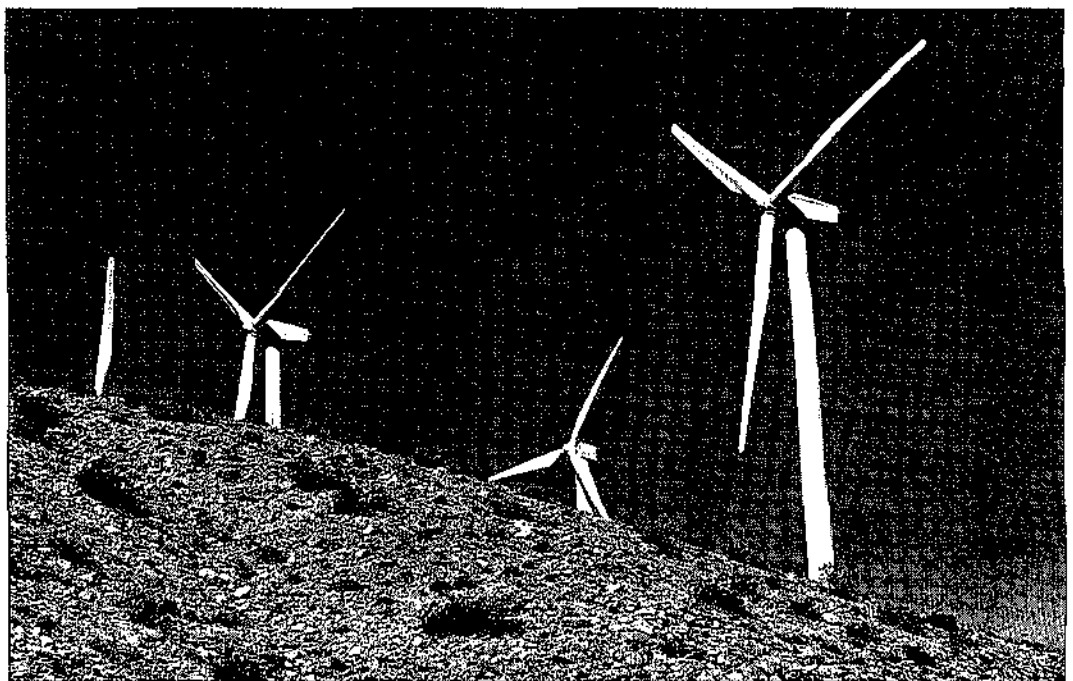
Otherwise these energy sources can only ride on the back of base-load power generators, and contribute no more than about 20 per cent without causing instabilities in a national power grid. If there is a glitch in the system a large fraction of the grid can collapse.

Germany has the most extensive wind farms in the world, intermittently meeting up to a perilous 20 per cent of their total electrical load. Last week (November 5) a sudden power shortage in Germany triggered blackouts across Europe, trapping people in lifts, halting trains and plunging millions of homes into darkness. Power was restored within a matter of hours, but there are now calls for closer co-ordination of power suppliers.

Only a month earlier consultants warned that growth in European energy demand and lack of investment had led to low margins of safety and raised the risk of supply interruptions.

Could that happen here in Australia if we rely too heavily on fluctuating sources of power?

There is a further cautionary warning, this time from Denmark, once a leader in wind farms. In 2004 it was reported that it had decided to build no more wind farms on land or at sea because wind power had given it the most expensive power in Europe. But it would continue



FANNING DISCONTENT: In England residents are pleading for an end to wind turbines so they can sleep at night.

manufacturing wind turbines for export as it was a world leader in the technology.

Why was Danish power so dear? Because wind is so fickle. When, due to lack of wind, the resultant shortage of electricity occurs, the Danes are forced to import power at premium prices. They can't get it from German suppliers since they usually have calm conditions at the same time. So the Danes are forced to fall back on the underwater cable to Sweden and the Nordic power grid where the power is a mixture of hydro and nuclear.

But worse, the Danes, encouraging farmers to have wind turbines on their land, contracted to buy the power they produced. When the wind throughout the region blew strongly the surplus of power led to dangerous over-voltage problems. Embarrassingly, the Danes on occasion had to pay good money for some other country to consume it!

Wind turbines have their problems: among them shadowing, deforestation, bird strikes and noise. The energy in windflow is limited, so the turbines on the best sites rob

energy from others close in their shadow. Trees also rob turbines of wind energy, so most must be cleared.

There are Kooragang-size wind turbines between homes and the sea right along the picturesque Cumbria coast of northern England. A few weeks ago residents presented Tony Blair with a 10,000-signature petition begging him to replace the turbines with a quiet nuclear power station so they could get some sleep at night.

Power from the sun has many uses: water heating being an obvious one. It comes into its own for small installations with battery storage. These include water-level monitors and miniature weather stations reporting conditions by telemetry without need for a mains electricity supply.

And then there are those environmental heroes who, like a relative of mine, have built a solar-powered home.

As its proponents like to point out, solar power production is greatest when air-conditioning loads are at a maximum: the summer daytime electrical load peak. They fail to mention the other serious daily load

peak: on winter evenings when people are cooking meals and heating their homes. No sunshine then.

One day in the future, when superconducting hydrogen-filled cables are perfected, it will become possible for huge solar arrays in the Australian outback to deliver electricity and hydrogen for our homes, industries and transport needs.

Until then, clean green nuclear reactors are the only practical non-polluting option for our energy needs.

Nuclear waste need not exist when new breeder reactor designs come online to convert it into short-lived elements that need to be sequestered for only a few decades, rather than thousands of years.

Nuclear science and engineering are now making great strides, of which the rest of the world plans to take advantage. Will Australia wake up in time?

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