

WHY AREN'T WE TALKING ABOUT GEOTHERMAL ENERGY?

by Simon Prentis

One of the most depressing things about governments is that though they are supposed to be looking after our long-term interests, they never seem to be thinking further than the next election. For quite some time it's been obvious to anyone who has given more than a moment's thought to the matter that – within the lifetimes of most of us – our global civilisation is likely to face an energy crisis whose consequences will make the current squealing over the credit crunch look like a provincial Punch and Judy show. The coming of 'peak oil' has been predicted for decades, but instead of using our dwindling resources of carbon fuel to prepare for the reality of life without them, we have simply busied ourselves burying our heads – and our troops – in the sand. Gordon Brown seems to have finally woken up and smelt the coffee; but his response is hardly encouraging. In his frantic bid to extricate himself from the disaster zone that Teflon Tony has bequeathed him, within the space of barely two weeks he has flip-flopped from the politically correct (7,000 wind turbines!) to the borderline desperate, announcing that there will now be “no upper limit” to the number of atomic power stations to be built.

At least he's being realistic. Even if wind and wave power projects were actually to deliver the kind of energy levels more optimistically predicted for them, they are hugely expensive to build and massively invasive in environmental terms. And that's before you consider the carbon footprint of the work required to build and install them, let alone the ongoing maintenance issues. In the case of barrages in particular (though the same consideration applies to wind turbines) there is considerable doubt as to whether the total output over their relatively limited lifetimes would allow this energy to be effectively recouped. The same issue of net energy yield dogs the production of bio-fuels as well, though unlike Barack Obama, it seems that our Gordy has a more sanguine view of the likely damage that such a diversion of potential food resources would inflict on both the economy and the environment.

Nuclear power stations are at least 'green' in terms of CO₂ emissions once built, and possibly represent the only practical medium-term solution to the looming crisis, but in the longer term they are no solution either. And not just because we will be

saddling future generations with the insoluble problems of disposing of ever-increasing volumes of radioactive waste; uranium too is a limited resource with its own built-in 'peak' which could be as little as two or three decades away. It's time to face the facts: in terms of genuine sustainability, there are only two sources of energy that we can hope to rely on in the long term for the future needs of the planet; the sun and the heat of the earth itself.

But though technical advances may render it viable sometime in the future, solar energy is still not close to being tapped on an industrial scale, and is in any case hampered by the fact that it is only available for 50% of the time due to the inconvenient truth that the planet spins on its axis every 24 hours. Geothermal energy, by contrast, is available round the clock and is virtually inexhaustible. What is it, exactly? A person could certainly be forgiven for not knowing, so deafening is the silence on the subject; but it relies on the fact that the core of the earth is a large ball of iron with temperatures of well over 5000°C – comparable to those on the surface of the sun – and so much heat radiates out from this source that at relatively trivial depths you can reach rocks that are hot enough to boil water.

And we already have a simple technology that makes use of this energy. Water from the surface of the earth either seeps down or is pumped to the hot rocks below to produce steam which is then used to drive turbines using essentially the same technology that produces power now, except that you don't need to burn coal, gas, oil or uranium to do it. Electricity has in fact been generated from geothermal energy for well over a century, and is today produced on a commercial basis in over 20 countries worldwide. Surprisingly, the generally eco-unfriendly United States has the largest geothermal energy programme in the world, and a recent study conducted by MIT at the request of the Department of Energy concluded that 'with a modest investment' (by which they meant about \$1 billion, less than the amount of money currently being spent by America *per day* on oil imports) the US could achieve up to 20% of its total power requirements in this way.

That's with existing technology, which drills to a depth of about 2-3 kms to reach the wells of superheated steam needed to drive the turbines. But with the application of more sophisticated drilling techniques from the oil and gas industries, which can

achieve depths of greater than 10km, it's estimated that this technology could be applied in up to 140 different countries around the world. Why don't we hear our Prime Minister (or almost any public figure) talking out loud about this? Even the sun-starved UK has a suitable slab of hot rock at about the right depth (just over a mile) down at Bath, the source of the Romans' famous hot spring. And it wouldn't mean knocking down the Royal Crescent to exploit it, either – another beauty of geothermal energy is that the power generation facilities can all be built at or below ground level, minimizing the environmental impact.

And no, I'm not being paid by any geothermal lobby to write this (though perhaps I should be). I'm simply driven by a sense of shock and horror that such a simple solution to our problems is being completely ignored, not just by the authorities, but by commentators in the media in general. Of course, as with any relatively underdeveloped technology, there are still problems that need to be resolved; but the principle is proven and the resource is effectively unlimited. By all means build nuclear power stations in the short term if we must, but as a long-term fix for an energy habit that will not go away, not only is geothermal the only viable solution, it is also the most reliable and aesthetically pleasing. All that is required is the political will. We've just thrown £50 billion – with maybe more to come – at our morally hazardous banking system; for the same sort of money we could buy ourselves a secure future in energy terms. Are you listening yet, Mr Brown, or do we have to wait for your successor to take up the cause?