

The future of energy

What is the solution for life after oil?

Nuclear

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With a significant population density and an evolved energy consumptive culture, the UK's demand for power is greater than 1 Watts per square metre – significantly in advance of the world average.

What is the solution? Renewable energy sources, of course, release the dependence on the greenhouse gas producing oil and gas. However, current technologies are capable of generating power typically with a capacity of a few Watts per square metre. It is clear then if this were to be the only source, then a very large fraction of the UK would have to be covered with, for example, wind turbines.

The Royal Society, in their report "Towards a Low Carbon Future" (2008), conclude "Due to a lack of progress in developing renewable energy technologies, nuclear power was seen to have a key part to play". The current Government intention to build a new generation of nuclear reactors then fulfils part of the solution – although the build plan would only correspond to the replacement of existing reactors; to be decommissioned around 2020. Additional energy generating capacity will be required.

This re-engagement with Nuclear Power is not without its own challenges. The demand for skilled graduates required for this investment is not met by the current capacity for universities to deliver and, moreover, there is a paucity of Nuclear research. Not to be forgotten is the issue of waste disposal. Universities and Government must invest strongly.

What about the longer term? Current generation fission reactors will only be tenable for about another 100 years. In the Nuclear sector there are two probable options; fusion power and fast reactors. Both involve substantial scientific challenge to realise. However, without that endeavour it is uncertain whether the UK can be competitive, and it may have set itself an environmental and economic challenge to reach by 2050 that cannot be attained.