



## Supporters of Nuclear Energy

# Newsletter

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### **Some things in human affairs are certain**

The future prospects for successful energy production are crystal clear, unlike other matters that face nations today. The only feasible solution is nuclear deployed on a grand scale, although there is a healthily wide choice of actual designs to choose from. In some countries the population at large is beginning to appreciate the benefits nuclear in spite of contrary government policies. This happened most recently in Taiwan where a referendum in favour of nuclear over-turned existing anti-nuclear plans by 59% to 41%.

Persuading people to read books is hard, but here is a video of a recent seminar given in Oxford <https://www.youtube.com/watch?v=pSmEPsRaQV0> and a pdf edition of the same [https://www.researchgate.net/publication/328996079\\_When\\_Fear\\_Kills\\_The\\_Case\\_of\\_Nuclear\\_Energy\\_pdf\\_version](https://www.researchgate.net/publication/328996079_When_Fear_Kills_The_Case_of_Nuclear_Energy_pdf_version)

In the following short piece I look at the the nuclear question from the perspective of an individual and his or her family.

### **My Energy – an important aspect of personal security**

Sourcing food is an ever-present objective in life, for mankind as for animals. The need is personal, not just altruistic, and timing is of the essence. As Alice tells the White Queen “Jam tomorrow” is just not good enough!

In early times mankind learnt to use energy outside his body – fire at home, power from windmills and water wheels. And he became just as concerned about establishing access to this energy as he was about access to food. He hoarded it, fought over it and died for it.

However, with the advent of the industrial revolution - its coal, oil and gas – brought great improvements, for those who had the necessary access. Living standards rose and populations increased dramatically for the “haves”, but competition between different groups for access caused conflicts and wars at all levels. While many

essentials of life, such as fresh air and water are often shared as common rights, this is only accepted where supply is sufficiently uniform. But that has never been true for energy. Many pages of history and economics tell how access to energy should have been divided up, but wasn't.

Now in the 21<sup>st</sup> Century the environment, previously taken for granted, is threatened by the use of the very fuels on which the industrial revolution has been built. If the combustion of carbon is to cease, what is the availability and security of other supplies? Evidently the renewables that proved inadequate and unreliable before the industrial revolution remain so today. Their weakness is responsible for the huge plants built to harvest them – plants that disfigure the environment and are anything but “green”. But even these behemoths are becalmed for significant periods in a way that no market mechanism can bridge.

The answer is nuclear power, as members of SONE know full well. But there is a social task too. People need to accept that nuclear brings the availability and security that they seek. Unfortunately it still frightens many of them. Explaining what nobody ever told them before is a matter for public education in schools and the media. There is no escaping this task, although it will take a long time. Right now, few people know anything about nuclear beyond what they have learnt from thrillers and inherited scare stories, encouraged by the cold war politics of years ago.

Energy security is a basic need that the public understands, and a guaranteed local energy supply is preferable to a remote one. In the UK natural gas from the North Sea is now supplemented with imports from the Middle East, USA and Russia – world wide sources that are not secure, however cheap.

Nuclear fuel, uranium and thorium, is widely distributed around the world and easily stockpiled to provide long term security. However more should be done to engage the public appetite for local energy. If small nuclear stations were built to supply 500 MWe or so near cities or counties in small groups, the inhabitants would gain more acquiescence and familiarity with nuclear: they would be more likely to know someone who worked at the plant; their children could visit there on a school visit; the plant management could engage with local charities and functions. Unfortunately this is not what happened with the early plants, and, what is worse, this is still not country-wide planning policy today. Of course, such plants should be elements of the integrated national grid, but in that context locals should feel that “their” station was doing something for the nation as a whole. A social structure where contributions are seen as moving upwards to the centre has a different acceptability to one where allotments are handed down from the centre. It is a matter

of perception and confidence.

In the UK the first nuclear power plants were mostly sited as far from centres of population as possible. Rather than educate the wider public in the genuine safety of nuclear technology, the UK Government took the easy way out of placing plants in remote locations. This has had the undesirable effect of creating ghettos of nuclear know-how and confidence rather isolated from the general population. Approving power station design may be a national problem but local people should engage with individual siting matters.

Furthermore, the opportunity to utilise waste heat for district heating and industrial processes depends on industry and conurbations being nearby. Electrical transmission losses are least when generators and consumers are nearby too. Opportunities based on hydrogen generated by off-peak electrical power should be exploited by a new chemical industry. In a carbon-free economy hydrogen is a transport fuel and also takes the place of natural gas in the existing gas distribution network.

Until recently the nuclear industry has been short sighted in promoting exclusively huge plants, over engineered in the name of safety. Now at last smaller plants are proposed, designed to be fail-safe, with modest cooling requirements and modular construction. This means that elements can be manufactured by suppliers across the country, transported by road and assembled more rapidly on site. The increased use of SMEs broadens the base of community involvement.

Nuclear power plants need little land and no extensive safety zone: a total of 15 hectares is enough for an existing gigawatt station. Unlike accidents at chemical and petrochemical plants those at nuclear plants have not justified evacuation. At Chernobyl there was an exceptional accident in the dying days of the Soviet Union. It resulted in much socio-economic misery unrelated to radiation and the thriving wildlife park that exists there today – but there were remarkably few deaths (43).

Though nuclear plants may not need a large area but too often in the past plants have attracted negative comment for their brutish concrete profile. Their fail-safe features require some height to allow control rods to fall and liquids to circulate effectively under gravity but some newer designs achieve the total height required by increasing the structure below ground. Other designs show a soft external profile with architectural features that do not just seem to shout “POWER!” With clever use of colour and landscaping, the people whom the station serves might become proud of their station and welcome its presence.

NuScale, Rolls Royce and Transatomic are just three designs that already seem interested in this beauty contest. More please! And let's have nuclear plants in the heart of the country at places like Didcot and Drax. Currently Drax burns subsidised imported wood chippings – arguably the most environmentally ill considered power plant in the UK today.

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Finally....

*May we wish all recipients of this new letter  
a Very Happy Christmas  
and  
Energetic New Year!*

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