THE FOUNDATION FOR SCIENCE AND TECHNOLOGY

**CUGPOP**

## WORKSHOP SUMMARY

## What is the future for nuclear power in the UK?

Held at the Master's Lodge, Trinity College, Cambridge on Saturday 9th July, 2005

### Recorder's statement

I have recorded here what I *heard* of the discussion, which was not intended to deliver consensus but to be an open debate; I hope conflicting views will be evident and that the reader will understand that not all present agreed with all statements.

### Setting the scene

1. Nuclear issues are complex but no more so than those facing any other choice of energy source; safety, health, environment issues face all sources along with economic, financial and social. The meeting agreed that discussion would focus on nuclear power in the context of an assumption that any policy choice that addresses energy security and climate stability would need to be based on an assessment of a diversity of sources including nuclear. The discussion would focus on a limited number of key issues, including:
    - What technologies would be available in 2010/2020/2050 and beyond?
    - What costs of carbon make nuclear attractive?
    - Can we get an unchallengeable set of cost assumptions?[1]
    - What are the costs of decontamination and waste?
    - What are the implications for safety, proliferation and waste management?
    - What is the framework for dealing with inter-generational issues?
    - Is proliferation risk likely to increase with new build?
    - What does the public really fear? Are public and political perceptions based on old or new technology? Can we learn from recent Scandinavian experience in public debate?
    - How would we find the skilled personnel to manage any growth in nuclear power, given the current shortfalls and long history of decline in skilled individuals?

**Glossary**

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| ADS | Accelerator Driven System |
| BWR | Boiling Water Reactor |
| CANDU | Canadian Deuterium Uranium Reactor |
| CCGT | Combined Cycle Gas Turbine |
| CoRWM | Committee on Radioactive Waste Management |
| CUGPOP | Cambridge University Government Policy Programme |
| EPR | European Pressurized-water Reactor |
| FB | Fast Breeder |
| LWR | Light Water Reactor |
| MOX | Mixed oxide fuel |
| NDA | Nuclear Decommissioning Agency |
| PBMR | Pebble Bed Modular Reactor |
| PWR | Pressurised Water Reactor |
| RCEP | Royal Commission on Environmental Pollution |

### What are the Build Options? What new technologies are emerging? What do existing technologies have to offer?

2. At the world level there are two different planning time scales – up to 2030/35, the period in which most current plant comes to the end of its life and they could be replaced by upgraded present technologies, and beyond to 2040/2050 when new technologies could be considered. In practice, the UK needs to make early decisions about both the next 5 to 8 years because existing Magnox reactors end their lives in this period and for the long-term because of the lead-in times for research and new technologies.

3. In the short-term, low risk, high maturity technology is needed; the choice of nuclear over other options would depend on criteria of balance of supply, energy demand, and political concerns. Most usable options already exist, and the criteria of choice are clear. We now have much experience in good practice operation and governance. To 2025, new-build will use known technologies such as the Pressurised Water Reactor (PWR), Boiling Water Reactor (BWR) or Canadian Deuterium Uranium Reactor

[1] See W J Nuttall, *Nuclear Renaissance*, IOP, 2004 for a good set of cost assumptions and illustration of the assumptions underlying differing assessments.

(CANDU) for reasons of cost predictability, safety and reliability; any new technology would have to meet still higher standards. Much can be done to improve cost effectiveness and competitiveness by raising conversion factors.

4. Current nuclear plants are designed for large-scale electricity supply; options for smaller units are not yet cost effective. For example, Pebble Bed Modular Reactor (PBMR) technology uses a graphite moderator, which implies low energy density and therefore small plant, but also more expensive power. PBMR small plants are really only effective for high temperature applications.

5. In the period to 2040/2050 much renewal of current plant would be needed so this is the target for long-term investment. The cost of development of alternatives (a demonstration plant would cost in the order of £1-2bn) is too high for private investment. Some governments have identified a strategic role for nuclear and invested accordingly (e.g. China and Japan) but most have not. The costs could be shared through international consortia but nations seem currently reluctant to participate in such projects.

6. In the longer term, a credible global requirement might be for nuclear power to provide one third of all electricity in the medium term, which would imply about 3-4,000 reactors at current outputs. That would rapidly lead to a Uranium (or Thorium) supply constraint within the design lifetime of plants, so new build might shift to Fast breeder (FB) technology though it is not currently competitive (costs about 1 to 4 times the cost of a LWR). FB can push energy availability from Uranium up from 0.5% to 50-60%. India is already making this calculation, being short of Uranium; it is aiming at FB technology (based on Super-Phoenix) by 2009 and may become an important source of FB expertise and technology. It is also exploring the use of its Thorium resources.

7. One longer-term option as an alternative to FB is fusion, which may be viable by 2050 to 2060[2] at the earliest. It would have the advantages of unlimited fuel, intrinsically high safety and a small output of wastes (bombarded wall materials, containing elements with half lives of only around 10 years). There may also be options that bring fission and fusion together.

8. Applications of nuclear power outside electricity generation can be envisaged (for example propulsion, desalination or hydrogen production) but as yet there is little or no demand for them. The most likely new applications would be for supplying heat for the petroleum, chemical, glass or other industries.

9. The long run (>2060) technological requirement will probably be for FB and high Thorium reactors; the technological options need research investment now.

### What are the economics of nuclear power?

10. There are over 400 reactors worldwide, with over 11,000 reactor years of operating experience. 27 new plants are under construction, of which two are in Europe. New build is coming in to cost on time. The key issues are about reliability and safety; current models are reliable in operation and Uranium is sourced from stable countries. Safety measures are largely proven and, increasingly, passive.

11. The base case for nuclear power will depend in part on credible, transparent cost assessment (but also on security of supply and carbon reduction targets). Governments are committed to transparency though some uncertainties may remain around commercial sensitivities.

12. Results of cost studies vary widely but this is largely down to the choice of discount factor. In turn, this depends on the attitude of investors to risk; risk mitigation therefore leads to lower costs. An assessment of a European Pressurized Reactor (EPR) using an 8% discount rate thus yields a competitive cost for energy of around €30/MWh. This includes capital and financing costs.[3] However, if the economics are assessed in more usual commercial terms of Internal Rate of Return or Net Present Value (NPV) excluding financing costs, nuclear still doesn't look attractive compared to an investment in an alternative energy generation project.

13. New nuclear designs have lower costs because of larger units, simpler designs (especially passive safety) and lower use of components, factory-based modular construction, material improvements and consolidation of markets around a few competitive vendors. Capacity factors are now routinely above 90% and operating/maintenance costs are reduced. The Finnish experience, where EPR has been sold at a competitive rate and within EU competition rules, shows that it is possible to develop an economically viable future for nuclear power provided there is political leadership on the issue.

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[2] ITER was said to take about 10 years to build and another 6-8 years to provide results. Prototype stations could emerge in 25 years, becoming commercial 10-15 years later.

[3] The UK Energy Research Centre is developing models to assess the cost and other implications (such as $CO_2$ reduction and energy security) of different UK energy scenarios, including those suggested by the RCEP. The results of the models are very dependent on their input (including cost) assumptions, so sensitivity assessment will be a key factor.

14. Fuel accounts for about 20% of total cost (contrast natural gas at 60%). The largest costs are capital and financing, which encourages a strategy of sticking to single or at least few designs to lower unit costs. Historical cost over-runs resulted from "design as you go", together with poor management, delays in approvals and changing legislative requirements, and a cost-plus culture in an uncompetitive regulated market.

15. It is possible that future decommissioning and waste management costs are likely to be covered by nuclear operating companies being asked to pay funds every a year into a sinking fund. This puts an extra burden on the economics of a nuclear project – costs cannot be discounted back from the end of life of the facility.

16. Waste arisings, especially of low and intermediate level waste, can be sharply reduced by comparison with Magnox. Once the fuel rods have been removed, the remaining reactor materials are not very radioactive; the problem is legacy wastes. UK's legacy problems relate both to the multiplicity of types built and to the lack of ongoing provision for decontamination and waste treatment, resulting in very high end-costs. The overall costs of UK waste disposal will be addressed in the report of Committee on Radioactive Waste Management (CoRWM) due to be published in July 2006; government would need to distinguish clearly, and then effectively guarantee, legacy costs.

17. Industry will take technical and performance risks in its stride but not revenue risks; currently the incentives are against new build. Because of the long time scales, investors need certainty on waste policy. CoRWM's recommendations on the way forward, for high level waste in particular, will need to be acted on rapidly. There are also disincentives related to volatile energy prices in a deregulated market; nuclear power is price-taking from the fossil fuel market. Political uncertainty and slow licensing (not costly, but time consuming) compounds this. Pre-licensing of technologies could be a significant contributor to speeding up individual cases. However, there are doubts whether Nuclear Industry Inspectorate have the qualified staff available to carry out the necessary assessment to cope with new build (and with the creation of the Nuclear Decommissioning Authority there will be changes in approach to their role).

18. Strategically, the choice of energy supply portfolio will depend in part on the nature of the sources. Nuclear power delivers large amounts of power reliably but not flexibly; it would therefore be most efficient to use it to supply base load (i.e. the minimum power requirement typified by summer night usage – up to 40 % of the max winter daytime demand). The gap between should be filled firstly by (zero-carbon) renewables and the remainder by whatever was the most efficient source. In this respect, the Renewables Obligation should not be considered as a means of price reduction but as a support to diversity of sourcing through alternative technologies, protecting them from the impact of volatile gas prices.

19. A Royal Academy of Engineering[4] study concluded that nuclear costs are comparable in general with those of Combined Cycle Gas Turbine (CCGT) (with renewables two times higher); indeed at this moment, nuclear energy costs are less than those of imported gas (as little as half). Such comparisons are highly dependent on gas price forecasts and the choice of discount rate and waste management costs. A higher discount rate moves nuclear cost towards the same level as renewables; on the other hand, a higher cost of carbon pushes CCGT prices up. There is much debate around these estimates.

20. A political judgement is needed on longer term (30-60 year) energy prices and the benefits of nuclear and other sources, leading to a decision about whether market guarantees of a floor price are needed to give confidence to investors and suppliers. While this is at one level an invitation to Governments to retreat from their liberalised-market agenda for price control, in reality, both governments and investors can be sure that with the rise in demand from India and China, continued rises in fossil fuel prices, especially for gas, will be almost inevitable unless higher prices stimulate new exploration or there are technological gains in tar sand recovery rates. The likelihood of carbon taxing would also lend confidence to suppliers of non-carbon fuels. Certainly, carbon costs need to be factored in to any cost comparison, even though international agreement is some way off.

21. Social goals (cf. The 2003 Energy White Paper) such as fuel poverty will need to be addressed by non-market mechanisms; it is not sensible to deliver them through prices that don't fully reflect externalities. However, it is recognised that raising prices after the recent period of significant price reductions is a hard call for Ministers as the fuel protests showed.

22. Nonetheless, an overall conclusion might be that cost is not the final issue; rather it is energy security and carbon reduction. Security of supply is declining, both because of growing demand from China and India and because of political problems in supplier countries, not just in the Middle East but also in Russia where Gazprom's

[4] www.raeng.org.uk/news/publications/list/reports/PB_Power_Presentation.pdf

stranglehold over EU gas supply is potentially threatening.

**What are the risks? How are they perceived and can they be quantified? Can the risks be communicated? Can security risks be managed?**

23. A good starting point is the Royal Commission for Environmental Pollution (RCEP) report of 1999 on "Setting Environmental Standards", which lays down a framework for risk assessment. Scientific assessment is just one component of this process; the public need to be engaged early in formulating questions and identifying value issues. A distinction is made between "hazard" (real, technically-assessable risk) and "outrage" (the public perception, especially of, the consequence of a serious event, however unlikely). The two often overlap but it is essential to remember the "outrage" component. Building a "trust asset" need long-term investment[5]. Effective communication of risk is essential if rational trust (as opposed to belief without verification) is to be rebuilt, after its erosion by events over the last 50 years[6]. Transparency alone is insufficient; effective explanation (not talking down) is needed and listening is essential.

24. Analysis of views posted on websites shows nuclear proponents largely dismissive of risks, considering fear simply as an obstacle. By contrast, anti-nuclear sites, e.g. Greenpeace, the Sierra Club or FoE, address real issues around long term storage, large scale accidents, pollution, health effects near reactors and other nuclear plant, and proliferation and security.

25. The public often find the proponents' arguments glib even if true, for example that objective analysis shows that the contribution to released radiation of nuclear power plants is lower than that from coal in normal operations. There is suspicion about confident statements of control and certainty. Risks are often presented in ways that are meaningful to specialists but not meaningful to the public. In the UK the technical solutions to repository protection proposed at the NIREX inquiry were seen by both the public and the Inspector to be so complex and difficult to understand that, needing to operate over million year time scales, they lacked credibility. The Radioactive Waste Management Advisory Committee (RWMAC) appeal of 1997 failed at least in part because of its departure from the Royal Commission on Environmental Pollution (RCEP) standards, but also from a lack of external members and of independent test of the science through sponsored research.

26. Nonetheless it remains true that all energy production has risks and it is important to compare benefits and risks; the key issue is not to deny any of the risks if trust is to be regained. The Nuclear Decommissioning Authority (NDA) has the advantage of making a new start and having no history. Its first steps involve stakeholder consultations for each site. Such engagement (i.e. two-way communication) is essential. By contrast, CoRWM's public meetings may not be managed most effectively to deliver real listening and dialogue.

27. Public views focus less on nuclear power plants, which are rarely in the news, as on Sellafield and Dounreay. There will continue to be incidents associated with the reprocessing and storage plants, which will continue to colour public views. Events such as the Chernobyl explosion last long in the public imagination. Though it is argued to be not a relevant example, in that its design and management were wholly unlike any other station operating now in the West, people remember that, at the time, Chernobyl (and Three Mile Island etc.) was said to be safe and do not find similar assurances credible. Similar memories persist of the Windscale fire of 1957, which led to major contamination and the introduction of a ban on milk consumption in a wide area. Rather worse for public perception was the fact that it was not until 1983 that the NRPB admitted that the plume could "in theory" have caused some cancers.

28. The same mood of suspicion greets health statistics. Despite huge studies like the US NCI study of 1990 (which looked at 900,000 reported cancer deaths in people living near nuclear installations and showed no increased incidence of mortality or childhood leukaemia), people remain worried by issues like the apparent cluster of childhood leukaemia around Sellafield (or around some nuclear power plants in France and Germany). It was argued that, since the incidence is very low, it might be too low for normal epidemiological techniques to be effective. However, typically the statistical rigour of early published cluster studies has been very low; all the literature points to levels of radiation being too low by orders of magnitude to have such effects (whether there is in fact also a threshold for radiation impact, or cellular/genetic repair capacity, remains a hotly debated topic). The public in practice seeks a precautionary approach to such findings.

29. The acceptance of nuclear power by communities close to plants and installations is sometimes put forward as an example of the realism that comes from familiarity. Local dependency leads to positive support (though this may in

[5] Peter M Sandman, Responding to community outrage: strategies for effective risk communication, AIHA Press, 1993.

[6] The BBC will shortly run a series on nuclear power, which will review the experience of the last 50 years.

clude defensive support for poor practice) while the biggest opposition comes from around 20-30 miles away, i.e. within the radius of potential immediate effects but out of any sphere of influence or control (further away, views tend to be more neutral). However, Wynne et al.[7] showed large-scale ignorance about the operations and processes at Sellafield coupled with fatalism among the local population. Individuals however tended to be more realistic about the operating risks than the company, which often overstated levels of certainty and control. Absolute qualification of risks is more or less impossible, so it is essential to avoid overconfidence. It would be interesting to assess the effects of the Sellafield Visitor centre, now one of the major tourist-attractions of Cumbria, on local and visitor views and understanding of risk.

30. Proliferation and terrorism risks are salient with the public and are real. Ideally, protective measures must be built in from the start to any new build (retrofitting security to Sellafield has been very expensive). Security concerns would argue against any solution producing more plutonium. In some countries waste movement security could be better managed and monitored; there are concerns about the transport of high level waste particularly Plutonium in non-encapsulated form. The biggest terrorism risks currently come not from WMD but from low level sources that could be used in dirty bombs. However, looking further ahead, the difficulties that will always be present of handling this material contrasted to the growing ease of preparing biological agents suggest that this risk, though high, may become relatively less preoccupying. An international regime for control is an essential element in response to this risk.

31. Opinion polls show that politicians and scientists (at least those from Government or industry) are not trusted yet the Government needs to engage in a dialogue with the public about attitudes to the crucially issues surrounding climate change and energy provision if it is to be able to bring about necessary behavioural change. It was noted that there had been a major reversal of public view towards nuclear options (including the siting of a repository near Stockholm) in Sweden following extensive public debate.

32. In France, a Parliamentary Office publishes regular reports on scientific issues behind political choices, including on nuclear issues, which has contributed to parliamentary acceptance; both left and right support nuclear power for different reason of industrial policy. On the other hand, party political polarisation on this issue in the UK ran counter to effective discussion.

33. One option could be the establishment of a small time-limited task force to take evidence on these issues in order to help politicians take decisions; the Opposition had even proposed a "Carbon Free energy Agency" to depoliticise decision-taking, Bank of England style.

### What are the appropriate criteria for specifying the requirements for a nuclear storage facility? What are the options for storing high-level nuclear waste?

34. While typically, countries world-wide use nuclear power for about 30% (with range from 0 to 70%) of their electricity supply, nuclear power use has not grown as fast as might have been expected on purely economic grounds, partly because of technical difficulties but also because of real concerns about proliferation and terrorism and public concerns about waste management; people do not want the high level radioactive waste problem left for future generations but don't believe that there are safe ways to handle it now. This is hindering investment. Progress in Finland only came when a clear view was taken on the future for wastes; France will present its future vision in 2006 as a prelude to investing in new build/renewal of existing reactors.

35. Plutonium production continues to climb; while originally, most was from military sources, civil sources now account for 50% and will probably account for most new production by 2010. Separated Plutonium is mostly held in the UK, France, Japan, Germany and Russia. The US has taken a different route by not separating the waste, which will all be held at the Yucca Mountain repository.

36. France maintains an option to reduce the volume and radiotoxicity of high level waste from spent fuel by partitioning then transmutation through the re-use of Plutonium in MOX fuel but most UK waste materials are not in a suitable form for this option. World-wide, the growth in numbers of reactors will raise the risks of proliferation; its control requires both good technical solutions and good global governance. Questions were raised about whether it was safer to treat waste arisings on site or to ship them for reprocessing; as numbers of reactors rise and transport of nuclear materials increases, so the security risks increase.

37. Current UK strategy is to store Plutonium wastes (as $PuO_2$ powder; currently about 80 tonne, projected to rise to 140+ tonne from commercial reprocessing) at Sellafield in the medium term (~25 years). A long-term solution is urgently needed to reduce both safety and security risks.

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[7] Wynne, Waterman and Grove-White , Public perceptions and the nuclear industry in W. Cumbria; 1993, Centre for Environmental Change, Lancaster University

The options are safe storage/disposal or destruction through re-use as fuel.

38. Storage requires a safe matrix in which to immobilise plutonium for the long term. A significant part of the UK inventory is held in glass and there are options for improving glasses but ceramics are more likely to be the option of the future. If a safe matrix is available, then a decision also needs to be made between long-term storage in retrievable conditions or disposal; both require finding suitable sites. Deep storage is seen as essential, even to the NGOs, to reduce the security risks. Because of public doubts and intergenerational concerns, retreivability of wastes, to allow for any unforeseen problems or for the advent of new means of treatment, has become an important criterion for any long-term options, and is technically feasible, if more expensive than non-retrievable options.

39. The proposals of NIREX for a waste laboratory failed partly on the grounds of cost (seen as excessive at £1Bn) for a purely experimental facility.

40. Stable mineral matrices provide an alternative to glasses/ceramics. The oldest known minerals on earth are zircons from Australia, which have been present as closed systems for about 95% of the earth's history. There is evidence of encapsulation and decay of natural plutonium and other radioactive elements within zircon matrices over geological time scales. Examination of the crystal structure shows that destructive emission of alpha particles destabilises the mineral structure locally to form amorphous glasses but, so long as the concentration (by weight) of the radioactive materials is lower than about 5-10%, damage is localised and the connections between damaged areas is limited, thus preventing leachable channels forming between them. Using zircons would be not more expensive than glasses or ceramics and more effective; there is less concern about either location or terrorism/proliferation if the material is held in geologically-secure form. It was noted that CoRWM has apparently not studied this option.

41. The other option is to use the plutonium as a fuel rather than manage it as a waste; it was calculated that disposing of the current inventory would require the full lifetime of two fast breeder stations. Of course, this option in turn would depend on the political feasibility of building two new plants, but recycling has the merit of reducing new waste arisings. An intermediate option may be found in the Accelerator Driven System (ADS) reactor, which could provide the option to handle waste through transmutation in sub-critical conditions. However, this is costly; the technology might make a longer-term contribution around say 2050 if supply problems develop with Uranium and Thorium.

42. High level waste is an intrinsically soluble problem; in certain respects there are bigger problems with intermediate level waste[8]. New reactors however are substantially more efficient and turn out much lower levels of intermediate level waste. There will be merit in standardising reactors in order to reduce the complexity arising from different types of waste.

### Discussion - The Base Case

43. Public acceptance of nuclear power will depend on the credibility of base case, which has to reflect the combined problems of maintaining security (and therefore diversity) of supply and meeting the Government's $CO_2$ target. It is <u>not</u> about promoting a technology. The comparison will be made with coal.

44. If a decision were to be made towards nuclear options, a key question would concern the proportion that nuclear should provide as a share of a balanced energy portfolio. The answer is that nuclear, being an "always–on" technology should supply the baseload, which might be calculated as the minimum demand (night-time in summer) and might be about 40% of winter daytime maximum[9]. This provides for a zero carbon baseload and renewables should provide as much as possible of the rest. The inevitable shortfall (now 50% or more) should be made up of a balanced portfolio of non-renewables, allowing for both security and low carbon criteria. There are alternatives to such an approach that might achieve similarly low carbon outputs (e.g. using fossil fuels with carbon sequestration) but these are untested and nuclear is a proven way to achieve carbon reduction.

45. Such a solution would need social acceptance, especially if public funds are needed for the investment. The base case for nuclear would focus on the public goods of security of supply, climate stability and strategic relations with other countries, especially those controlling energy supply. Its contribution to the reduction in carbon emissions needed for climate stability might be around 1 Gtonne. It would recognise that the price of all energy sources is subsidised or otherwise subject to explicit or hidden tax distortions. It would also recognise that the market, in general, is more responsive to short than long term (>10 year) signals[10] - necessi

[8] The issues surrounding intermediate level waste were not fully characterised or resolved in the discussion.
[9] The RCEP report "Energy: the Changing Climate" noted that the design of the electricity grid is based on a nuclear baseload.
[10] cf. the Ernst & Young Report www.ey.com/global/download.nsf/UK/uk_generation_mix/$file/uks_future_generation_mix.pdf

tating government involvement in underpinning prices through fiscal or other measures. In any case, replacement of old by new stations would probably occur on existing sites, all of which are in NDA (i.e. Government) hands. The positive case would also recognise that the grid is based around big systems, particularly nuclear and that these big suppliers are essential for grid stability. Renewables are often (a) small suppliers and intermittent and (b) delivered from places that require new transmission lines – a matter of public objection.

46. The base case would then deal with the disbenefits, waste and the proliferation and terrorism risks. While approximations can be made to enable internalisation for environmental cost externalities, it is much harder to do this for the externalities around security issues. However, if robust answers can be given on these points – and the answers must include credible regulation of the nuclear industry and all points on the supply and waste chains - it might be possible to win over public opinion (cf. the Swedish and Finnish cases).

47. However, an alternative view is that many of the issues being discussed, in particular those relating to technology cost and availability, future costs of carbon and of decontamination and waste management are, from a public policy perspective, second order issues, i.e. not germane to the prior question of whether or not the government should intervene to favour nuclear power in the electricity markets. In other words, if, as the government has consistently made clear, utilities were to bring forward proposals within the current policy framework for new nuclear build this would be very welcome. If, on the other hand, the promoters of new nuclear build are seeking market distorting government interventions in the form of fiscal or regulatory incentives to reduce the economic risk of that build then there must be a clear case to demonstrate that this is the most cost effective way to obtain public goods such as enhanced energy security or a lower risk of climate instability.

48. Public opinion is clear that satisfactory answers to the inter-generational issues would be needed; these would have to address the imbalance between the payment by this generation for new build; the energy security/supply problems that will face the next generation and the climate impacts that would hit the generation after that, as well as the much longer time scale issue around waste. Issues of this sort cannot be dealt with only nationally; effective global regimes are needed, especially to address proliferation and terrorism issues.

## Conclusions

49. The need to make decisions soon, coupled with the very long time scales of the commitments resulting and their inter-generational consequences, suggest that this might be a good issues for an independent task force to give expert advice to the PM. There have been suggestions (e.g. from the opposition) to make this a non-governmental decision but the issues are of too high a public profile to take away from elected politicians. In any case it would be impossible to find a truly un-involved group of experts and there is a tendency for such Commissions to be used as a delaying tool to avoid difficult decisions.

50. An alternative would be to press for a high profile Government Department of Energy, bringing DTI and Defra energy responsibilities together (cf. the “nearly” Department of Productivity, Energy and Industry which was to have replaced the DTI at the last reshuffle); a top-down joining up of the Governments position, which currently reflected split Ministerial views is essential; the new Cabinet Committee on Energy and the Environment to be chaired by the PM may help.

51. That more than any other energy issue, this one is of very high public profile. The Scandinavian experience shows that an intelligent public debate can be held with careful planning and openness about the issues, which can lead to public approval of a nuclear development.

52. That short term decisions for the UK will be based on long-term global considerations, especially about climate change

53. That there is an urgent need to take action on maintaining and growing the nuclear skills base if any of the options are to be realised

54. The Foundation for Science and Technology is planning to hold a dinner/discussion on the UK policy with regard to nuclear power later this year or early next year and CUGPOP is planning a meeting on nuclear power next spring in its series for senior government officials.

Dr Miles Parker

Useful links:

www.bnfl.com
www.british-energy.co.uk
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