

Written evidence submitted by Dame Sue Ion FREng FRS

- What role can, or should, nuclear power play in achieving net zero and UK energy security?

Nuclear power is essential for both UK energy security, particularly in the light of geopolitical uncertainty arising from Russia's invasion of Ukraine, and in achieving net zero. The recently affirmed target of 24GW of new nuclear by 2050 demonstrates that finally nuclear energy is being seen as a fundamental part of the solution to both energy security and climate change mitigation.

Currently nuclear power generates nearly half of the UK's low carbon electricity and over its lifetime has saved more than 1bn tones of carbon emissions.

The Climate Change Committee has indicated that 38% of electricity in 2050 should come from 'firm' sources of which nuclear power is the only low carbon option at a relevant scale. The CCC has also indicated that the UK will need to quadruple its electricity supply by 2050 to cope with the decarbonisation targets of space heating and for transport. Hence the scale of the challenge for both nuclear energy and other low carbon sources of electricity.

Given all but one of the UK's existing power stations will retire by 2030, the need to move urgently to replace and expand the fleet is self evident

Nuclear energy's role goes beyond electricity production it is capable of contributing to supply of heat and for production of hydrogen. Both are possible with the currently foreseen Light Water Reactors – both large GW versions and Small Modular Reactors (SMRs) but also more efficiently with more advanced reactors such as High Temperature Reactors (HTRs)

- What are the main challenges to delivering the UK Government's commitment to bring at least one large-scale nuclear project to final investment decision by the end of this Parliament?

Commitment!! Also to bring at least one large scale nuclear project to Final Investment Decision(FID) by the end of this parliament is missing the point. What is actually needed is the policy commitment to a fleet of reactors to reach the 24GW target. The newly formed Great British Nuclear will hopefully deliver a report which summarises the importance of fleet build whether this be large GW versions SMRs or a mix of both. Only then will the private sector have confidence that the UK actually means business when it comes to investing in new nuclear power stations.

- How important is the finance model to ensuring a successful nuclear project, and is the regulated asset base (RAB) model the best one to deliver this?

The RAB model was essential to enable low cost financing of for example Sizewell C and if applied to any large scale nuclear project would add a small levy to bills of no more than a few pounds in the early construction phase. This should be compared to the cost in excess of £100 per household added to bills currently as a result of the costs of balancing the system as it copes with the inherent intermittency of renewable energy on the grid. With more firm power provided by nuclear energy on the grid the balancing costs would be lower.

There are other means such as Contracts for Difference, Government taking an equity stake in the early construction phase while risks are lowered and others where it would be appropriate for Government to consult more widely with industry.

What is really important is that nuclear power is included in the UK taxonomy and given the recognition it deserves as a source of low carbon energy. In Canada for instance the eligibility for green bonds has made a fundamental difference to its attractiveness. The current Treasury attitude which excluded nuclear from the Green Financing Framework was a fundamental mistake which needs to be rectified.

- What practical steps can the UK Government take to support the nuclear industry in developing a range of nuclear technologies, including small modular reactors?

As above Nuclear Energy must be included in the UK Taxonomy which should aim for a level playing field for all low carbon technologies and nuclear power's exclusion from the Green Financing Framework should be urgently reviewed

Clear Government Policy and Communication of intent is essential to enable trust and confidence. Other countries e.g. France have made announcements (14 new reactors by 2050 as part of its net zero challenge)

For SMRs Government could agree to be the power offtaker for e.g. the first 4. This would build confidence in the technology and open the door to fleet build. For AMRs Government needs to take a much more proactive role and state a commitment for the UK to be deploying technology such as HTRs in the post 2035 era. For these next generation technologies, costs will be lower due to much increased modularity and the ability to build most of what is required in factories.

- What would the likely cost be to the taxpayer of the UK Government supporting the development of a new nuclear power station at Wylfa?

It depends what financing model would be used. If a RAB, then similar to those of other projects. However the costs of NOT proceeding are far greater in terms of failure to meet carbon reduction targets, balancing costs and less secure energy supplies.

Wylfa is not the only very valuable nuclear licensed site in Wales. Trawsfynydd in Snowdonia would be ideal for hosting either SMR or AMR technology. The Development Company Cymni Eginio which is wholly owned by the Welsh Government has announced an intent to build the UK's first SMR there but of course needs the policy commitment and financing to proceed.

With the uncertain global geopolitics the possibility of Trawsfynydd hosting a nuclear facility capable of producing radioisotopes for medical diagnostic purposes and treatments should also be given serious consideration and attention by the Welsh Affairs Committee

- What is the potential economic impact for Wales of a new nuclear power station at Wylfa?

Wylfa is arguably the best site of the existing nuclear licensed sites for deployment of more than one large new power plant AND a series for SMRs. New nuclear power stations at Wylfa would produce more than enough electricity for the population of Wales, provide ~10,000 jobs during the construction phase and over 900 long term jobs for the duration of the plants' operation. All of these being highly skilled and highly paid in North Wales –one of the UK's most deprived areas. There would also be tremendous opportunities for development of essential supply chain services in N. Wales as well as elsewhere in the UK

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