

Submission to EU Energy and Environment Sub-Committee Inquiry into the implications of Brexit in the UK

1. The World Nuclear Association is the international organization that represents the global nuclear industry. Its mission is to promote a wider understanding of nuclear energy among key international influencers by producing authoritative information, developing common industry positions, and contributing to the energy debate.

2. We welcome the opportunity to contribute to the Common's Select Committee on the implications of leaving the European Union for British business. Brexit is a matter of the utmost importance to both the UK nuclear sector (as represented by the UK NIA) and the broader European nuclear sector (as represented by FORATOM), but it will also likely require action from global partners. The World Nuclear Association's major concerns relate to the UK leaving the European Atomic Energy Community – better known as the Euratom treaty – which governs aspects of nuclear trade, regulation and research within the European Union. Our views align closely with those of NIA and FORATOM.

3. The UK government has stated its opinion that the treaties are linked and that the UK shall exit Euratom at the same time it exits the EU, in March 2019. If such remains the case, then an appropriate transitional period should be established to ensure there is no unreasonable deadline that results. Robust arrangements to ensure that nuclear cooperation and trade continues to operate seamlessly must be in place well before the UK leaves the EU. We would like to see the UK government pursue this in discussion with the European Commission.

4. To tackle climate change, today's technologies must be used now. No single technology is the answer, and nuclear is required alongside renewables and other sources of electricity to ensure value for consumers while cutting emissions, creating jobs, boosting skills and keeping the lights on. Nuclear energy is the only technology available today that is at once scalable, dispatchable and low carbon. Modern reactor designs often generate electricity in excess of 90% of the time, unaffected by the weather or the time of day. New nuclear must remain a key pillar of the UK's current and future climate, energy, research and industrial strategy.

Market access

5. The nuclear industry is increasingly global in nature. Well run nuclear operations depend on the ready international trade of materials (especially nuclear fuel), components and the relatively easy movement of specialised individuals. It is standard practise for nuclear cooperation agreements (NCAs) to be signed between countries in order to help facilitate this. Currently, UK cooperation with many key nuclear countries is undertaken via the Euratom NCAs. Before Brexit takes effect, the UK government should seek to:

- **Create a new NCA with the remaining Euratom community.**
 - **Clarify the rules applicable to existing fuel supply contracts and set out the process for the movement of nuclear fuel and associated material with the Euratom Supply Agency.**
- **Conclude its own bilateral NCAs with key nuclear partner countries which are not part of Euratom.**

- **Clarify the validation of any existing bilateral NCAs.**
- **Negotiate an agreement with the EU on the trade of 'dual use' goods. If trade is to be expedited then this should seek to comport as much as possible with existing EU Dual Use Regulation.**

Regulation

6. Regarding safety; the UK nuclear safety regulator (ONR) is widely recognised internationally for its competency and independence, and there is no reason to be concerned about a decrease in standards following Brexit. However, it is important to the success of the UK new nuclear programme as well as future technology and services exports that, following Brexit, ONR should continue to:

- **Work towards the international harmonisation of regulation, codes and standards which will help with the licensing and deployment of internationally accepted standardised reactor designs.**
- **Share experience with other regulators – especially European ones.**

7. Regarding non-proliferation responsibilities; Euratom officials currently implement International Atomic Energy Authority (IAEA) nuclear safeguarding arrangements within the UK – a key condition for nuclear trade and important to the UK's good reputation within the international community. Therefore the UK government should:

- **Urgently seek to implement a replacement Voluntary Offer Safeguards Agreement with the IAEA, and provide sufficient resource to support a UK safeguards regime.**

Research & Development

8. Much of the research and development into civil nuclear technologies within Europe is conducted collaboratively under Euratom auspices. Research programmes are coordinated by EU bodies, (e.g. Fusion for Energy) carried out in what are essentially shared facilities located throughout the continent and staffed with both domestic and visiting scientists (e.g. the Joint European Torus, located in Oxfordshire), with funding distributed via EU research and innovation programmes (e.g. Horizon 2020). The UK benefits greatly from its participation in these research programmes, both via its outcomes and financially via contracts awarded to UK companies. Similarly, other Euratom countries have benefited from access to UK facilities and expertise. This communal approach allows the Euratom research community to hold its own with the large national programmes of countries like the USA, China, Russia and Japan. International collaboration is now a common feature of nuclear energy research, development and deployment (e.g. the Generation IV International Forum). To maintain any kind of strategic research trajectory, the UK government must:

- **Negotiate a new agreement and funding arrangement with the EU that would allow the UK to continue to be involved in Euratom R&D programmes up to and beyond the end of the current framework**
- **Identify nuclear research priorities, look for strategic international nuclear R&D partners who can help in meeting them and enact research and cooperation agreements with them.**

Trade opportunities

9. The global market for nuclear new build, existing reactor operations and waste management and decommissioning programmes is large and growing. This represents enormous opportunity for the UK nuclear supply chain and services sector. Some opportunities are clearly more promising than others as UK companies boast considerable capabilities and expertise in them – notably decommissioning. The NIA and DIT have done work in identifying high-priority export opportunities.

10. We estimate¹ the value of the investment in new nuclear build globally to 2035 is of the order of US \$1.5 trillion, with significant international procurement of US\$24 to \$30 billion a year after 2025. About US \$730 billion will consist of equipment purchases, of which US \$230 billion is in power generating equipment orders. The total value of work for long-term operation of exiting nuclear reactors amount to US \$50-100 billion per year, while the market for decommissioning is estimated US\$ 111 billion to 2035.

11. It is important that the UK government sets a strategic long term vision for nuclear energy, applied consistently across its R&D priorities, key nuclear partners and its domestic energy and industrial strategy. We would hope to see this feature in the forthcoming Nuclear Sector Deal.

12. There is currently a window of opportunity for the UK to be an early mover in certain advanced nuclear technologies. Prioritising the development and deployment of these technologies domestically would create new high-yield market opportunities for UK companies and open up potential future export opportunities. The most important of these is small modular reactors (SMRs). These should not be forgotten or ignored in the lead up to Brexit. The UK National Nuclear Laboratory released its 'Small Modular Reactor Feasibility Study' in December 2014 outlining the potential global market for this novel technology. We repeat their top-level conclusion here.

- **The market study concludes that there is a very significant market for SMRs where they fulfil a market need that cannot, in all circumstances, be met by large nuclear plants. The size of the potential SMR market, is calculated to be approximately 65-85GW by 2035, valued at £250-£400bn, if the economics are competitive. In a regional assessment, the study also determines that there could be a UK market for around 7GW of power from SMRs by 2035, based on a demand for low-carbon generation and site availability for small nuclear reactors (less than 300MW). To gain access to larger potential markets for SMRs, it would be desirable for the UK to partner with another country in order to help access the international market.**

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¹ *World Nuclear Association, The World Nuclear Supply Chain – outlook 2035*