

ENERGY | UK | NUCLEAR

4 JANUARY 2021

ENERGY WHITE PAPER SUPPORTS PROMINENT ROLE FOR THE UK IN ADVANCED NUCLEAR TECHNOLOGIES

The long-awaited Energy White Paper *Powering Our Net Zero Future*, published on 14 December 2020, sets out an ambitious pathway to decarbonisation for the UK with a target to achieve net zero carbon emissions by 2050. As anticipated, the White Paper reignited the country's nuclear ambitions by recognising the important role that nuclear will play in the UK's future energy mix - both traditional large-scale nuclear new-builds and advanced nuclear technologies.

The White Paper built on the Ten Point Plan's commitment to create an Advanced Nuclear Fund of up to £385 million, including £215 million for Small Modular Reactors (SMRs) and up to £170 million for further research and development into Advanced Modular Reactors (AMRs). This will be supplemented by an additional £40 million to develop a regulatory framework and supporting UK supply chains. The government believes that SMRs, which are closer to commercial readiness than AMRs, have the potential to provide cost competitive nuclear power as early as the 2030s and could potentially compete with large-scale nuclear plants, provided they can achieve regulatory approval. It is not clear at this stage if the government is considering a regulated asset base (RAB) model for these investments, as it is for traditional nuclear, with the response to its consultation on the subject suggesting less appetite for a model which places risks on the consumer and taxpayer for less proven technologies.

The £215 million investment into SMRs - match-funded in the amount of £300 million by UK SMR, a consortium led by Rolls-Royce - will be delivered through the Low Cost Nuclear programme from 2021 onwards, as part of UK Research and Innovation (UKRI). This heralds the second phase of a programme launched in 2019 to develop a concept design for a UK SMR capable of being mass-produced. The programme consisted of an £18 million grant which was awarded to, and match-funded by, UK SMR. The consortium unveiled plans last month to deploy a fleet of 16 SMR power stations across the country, the first of which could be up and running in 10 years, with the factories able to produce two units every year thereafter. According to the consortium, each plant would produce 440MW/hr and would cost £2 billion. The additional £215 million investment would therefore help UK SMR produce a final SMR design for approval with a view to bringing the concept to a stage where it can attract private investors. Next steps will include building new factories to manufacture components (to address current deficiencies in the supply chain) and on-site preparation at power station locations.

Several other developers have expressed interest in UK development in the field of SMRs, including Moltex Energy, which is developing a 150MWe modular stable salt reactor. In this respect, the government has stated that it will open the approval process for submitting new designs to SMR technologies in 2021. This will be done through the Generic Design Assessment process, which was last updated in October 2019. The government also aims to build a demonstrator for SMRs and AMRs by the early 2030s although, no detail has been provided at this stage on how this will be achieved.

Up to this point, development in the sector had been hindered by a number of issues, including infrastructure gaps, a lack of qualified personal and of regulatory engagement and low supply chain capability. All the while, it was estimated that the global SMR and AMR markets could be worth between £250-400 billion by 2035 and amount to 65-85GW, while the UK market alone could amount to around 7GW by 2035. Despite a lack of clarity on how these solutions will be implemented, the government has made a clear commitment to develop a regulatory

framework, support UK supply chains and boost the industry's effort to reach regulatory approval with a view to attract more private investors.

It remains to be determined how funds will be allocated in practice to fulfil these objectives or how the proposed timeline will be implemented. Nonetheless, the Energy White Paper sent a clear and positive signal that the UK government is now opening the door to new nuclear and considers that it has an essential role to play in the energy transition.

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