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US AND KOREAN NUCLEAR PLANT CANCELLATIONS: IMPLICATIONS FOR UK NEW NUCLEAR BUILD

The US currently has 100 nuclear power plants in operation supplying about 20% of its power needs. A further four were under construction, two each in Georgia and South Carolina, until the owners of the South Carolina plants recently announced the cancellation of construction of its two Westinghouse AP1000 units, Summer 2 and 3.

Summer 2 and 3 had been under construction since 2013, with original operational dates of late 2019 and late 2020. However, due to construction delays and cost overruns, these were later revised to December 2022 for Summer 2 and March 2024 for Summer 3. The finances were a key factor in the decision to cancel construction, with the original estimate of \$11.5 bn having more than doubling to \$25 bn. The reasons behind this are no doubt complex, but as the US has not constructed a new reactor since the 1970s, the loss of nuclear expertise must be a factor.

Summer 2 and 3 were intended to showcase advanced nuclear technology and pave the way, along with the Georgia plants – also Westinghouse AP1000s, for a nuclear renaissance in the US. A further four AP1000s and 12 SMRs (Small Modular Reactors) are currently proposed and several more are in the early stages of planning. The fate of these and the two Georgia plants remains to be seen.

The economics of nuclear have always been the subject of much debate, but what seems to have swayed the South Carolina decision to cut losses is the availability cheap natural gas, enabled by the more liberal attitude to fracking in the US, and a flat energy demand due to improved energy efficiency. Ironically, the cancellation of Summer 2 and 3 will mean South Carolina's coal plants will need to run for longer, whereas they were originally intended to be shutdowns upon the nuclear units coming online. A decision to proceed or not with the Georgia plants is expected soon.

The Westinghouse bankruptcy has also complicated the picture in the US, with its AP1000 design being used for the South Carolina and Georgia projects and its role being reduced to a vendor supporting the EPC. Their situation has also had an effect in the UK, with Toshiba's stake in Nu-Gen now being considered by KEPCO. Rather than utilise the Westinghouse design, which was approved by the UK nuclear regulator, ONR, in March this year, KEPCO wants to use its own technology, which will cause a delay in construction of the Moorside plant while the necessary regulatory design assessment is undertaken.

The South Korean nuclear industry is also in difficulty, with the new anti-nuclear government suspending construction of the Shin Kori 5 and 6 nuclear plants for several months while it undertakes a public consultation on their future. This decision has generated much debate in the country and is seen as a threat to its nuclear exports, and KEPCO's future Nu-Gen.

Decisions to be taken in the next few months will be crucial for the future of nuclear in the US and Korea. The Korean decision in particular will have an impact on the Moorside project in the UK, and

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may put the government's climate change targets in jeopardy. Unlike the US, it is doubtful that the supply of natural gas from fracking will be a welcome alternative.

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