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POLICY COMPASS
Small Modular Reactors:
Nuclear Powered Revival or Rivalry?

By

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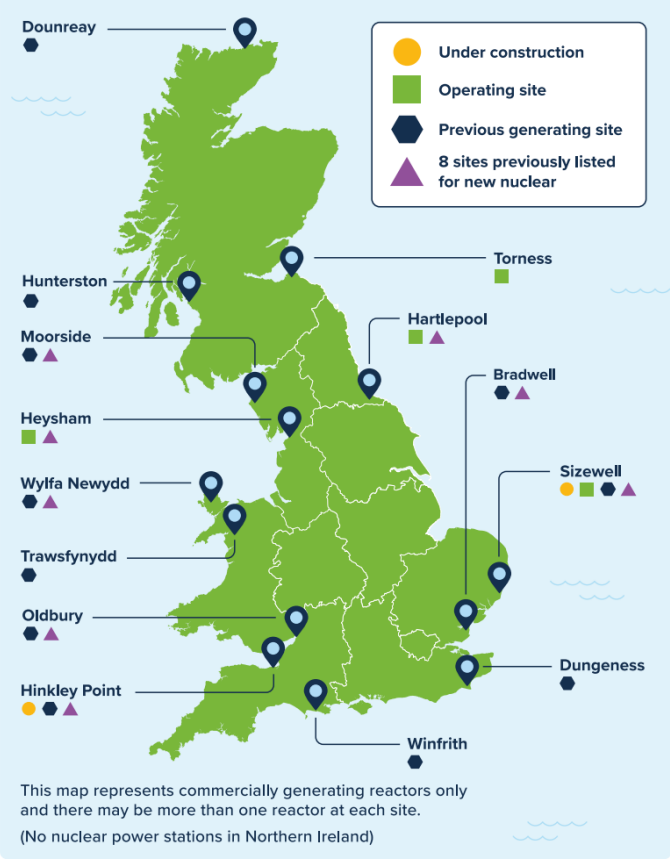
Executive Summary

- The UK has chosen Wylfa in North Wales as the site for its first Small Modular Reactors (SMRs), signalling an attempt to revive domestic nuclear capabilities, though the technology remains unproven and relies heavily on foreign capital.
- London sees SMRs as essential for addressing an impending energy supply gap in the 2030s, meeting net-zero obligations, and stimulating regional economic growth through clean-energy jobs and export potential.
- The project is also a strategic move to reduce long-term dependence on foreign nuclear partners like EDF and to reclaim technological autonomy in a sector long dominated by external players.
- The decision has caused friction with the United States, which expected its Westinghouse design to be selected, especially after strong political and financial backing from Washington.
- Despite ambitions for domestic capability, the UK still faces major constraints: regulatory fragmentation, unresolved long-term waste management, uncertain SMR costs, and ongoing reliance on US support for its nuclear weapons infrastructure.
- Wylfa is ultimately a high-stakes test: success could restore industrial capacity and energy security, while failure risks repeating the delays, cost overruns, and foreign dependence that have long undermined Britain's nuclear sector.

Key Picture: UK Civil Nuclear Sites (England, Scotland, Wales)



Source: Civil Nuclear: Roadmap to 2050, (2024)

1. Introduction

The UK has announced Wylfa on Anglesey in North Wales as the site for the country's first Small Modular Reactors (SMR), which according to London marks a seismic shift in British energy strategy. Backed by the newly founded Great British Energy (GBE) and produced by Rolls Royce SMR, the project demonstrates that the UK is not only capable of building complex infrastructure but is reclaiming its decades lost position as a pioneer in nuclear energy.

However, stark realities remain. Rolls Royce SMR is a subsidiary of Rolls Royce, and though majority owned by its British parent, it also receives substantial backing from Qatar's sovereign wealth fund, France's BNF Resources, US energy giant Constellation, and Czech state owned CEZ.[1] SMRs are also unproven, which explains why London has only commissioned three in Wylfa. Relying on foreign capital for untested technology hardly seems like the foundation for kickstarting the UK economy. However, if the worries about SMRs can be eased then it could prove to be an export priceless to confidence in Britain's nuclear industry and wider economic revival.

2. The Economic Angle

The economic rationale behind the SMR decision rests on three pillars. First, the UK faces a looming shortfall in energy supply in the 2030s as its ageing gas plants and existing nuclear plants are decommissioned. According to recent policy analyses, a third of the country's gas power stations are nearing the end of their operational life. At the same time, reactors built in the late 20th century will shut down without new investment. Without fresh capacity, the UK risks an increasingly fragile grid. Second, the UK has a legal obligation to reach net zero by 2050. While wind and solar offer attractive cheap, low carbon energy, their intermittency limits their ability to guarantee supply during the crucial winter months. Nuclear power can provide the stable energy to complement renewables and fill the seasonal gaps. Finally, London sees SMRs as a cornerstone of regional growth, with the clean energy workforce projected to reach 400,000 by 2030. SMR technology, if delivered at scale, could restore domestic supply chains, develop advanced engineering skills and generate future export revenues. As stated, the international stakes in Rolls Royce SMR signal belief in the long-term value of the technology. CEZ is also working to build SMRs in a plant at Temelin[2], with the hope being that other nations will be interested once the technology proves itself.

3. Building Reactors Without Burning Bridges

The broader geopolitical context is central to understanding Wylfa's significance. For decades, Britain's nuclear programme has been dominated by foreign partners. EDF, a French state-owned company, is constructing the 3.2 gigawatt reactors at Hinkley Point C and Sizewell C, two of the largest infrastructure projects in Europe.[3] China's CGN was previously involved in Sizewell before being excluded on national security grounds.[4] This pattern has left the UK vulnerable to foreign investment conditions, complex governance structures, and rising costs. SMRs represent an attempt to shift away from this dependence, enabling Britain to develop and export its own technology while reducing long term reliance on overseas suppliers. Despite a recent partnership between the UK and the US intended to streamline nuclear construction, Washington reacted with hostility to the Wylfa decision.[5] The US ambassador to the UK, Warren Stephens, expressed disappointment that Westinghouse Electric Company had not been chosen, arguing that its reactor was cheaper, faster and already approved.[6] The Trump administration had previously announced an $80 billion deal with the struggling Westinghouse, with the hope being that they would be selected to develop the reactors at Wylfa, potentially including a US government stake.[7] The UK's rejection of a US-backed design was therefore seen in Washington as both an economic blow and a political slight so soon after their nuclear partnership. It also came at a moment when demand for energy in the US is surging, driven by data centres for artificial intelligence, with companies such as Google, Microsoft and Amazon signing agreements to secure power from next generation nuclear technologies.[8] The American expectation was that London, a close strategic ally and a country whose nuclear

deterrent depends heavily on US missile infrastructure, would align with US industrial priorities. Britain's choice of a domestic design is therefore likely to intensify US pressure on future SMR or large reactor tenders. The Wylfa SMR plan also must be understood in the wider context of Britain's current position in global energy politics. Russia's invasion of Ukraine exposed the vulnerability of Europe's reliance on imported fossil fuels. European gas markets endured severe shocks which has led policymakers across the continent to begin re-evaluating nuclear power as a means of reducing their exposure to Moscow. For the UK, which has historically prided itself on energy independence, the crisis underscored the importance of domestic low carbon generation. SMRs offer a route to decarbonisation that strengthens security of supply while potentially creating an export industry that enhances Britain's influence in a world increasingly shaped by competition.

4. Red Tape, Rules, and Regulations

Although SMRs promise faster construction through factory production, reduced risk of onsite delays, and lower capital requirements, they remain unproven at commercial scale. Based on the Rolls Royce nuclear reactors used to power the Royal Navy's Vanguard submarines, their long-term costs are uncertain and some of the issues that plague large reactors apply to SMRs.[9] Waste management, for example, remains unresolved, particularly as the UK has yet to establish a geological disposal facility. Decommissioning small reactors may also be more complex due to the potential proliferation of sites. These uncertainties are compounded by the UK's regulatory environment, which is widely criticised for fragmentation. The 2025 Nuclear Regulatory Review found that nuclear projects face overlapping approvals, duplicated assessments and a risk aversion culture driven by the interpretation of "reasonably practicable".[10] The controversial Hinkley Point C, for example, spent £700 million on fish protection measures alone. Supporters of reform argue that overregulation, not nuclear technology or lack of capital, has been the true driver of cost and delay. However, London's desire for autonomy sits uncomfortably alongside the reality of its persistent dependence on foreign partners. EDF's dominance in large scale projects remains untouched and US companies will continue to shape British nuclear policy, whether through regulatory partnerships or future reactor bids. Britain's nuclear weapons programme still hinges on American missile technology and maintenance infrastructure. Production, testing, and maintenance of Trident missiles is carried out in the US, at the US Navy base in Kings Bay, Georgia.[11] This crucial dependence is not lost on London, so keeping the "special relationship" steady while building the UK's domestic and military nuclear capabilities will be difficult for the UK to navigate.

5. Conclusion

The stakes are therefore high. If the Wylfa project succeeds and proves that SMRs can be built on time and on budget, Britain will have restored a major industrial capability, strengthened its energy security, and positioned itself as a credible exporter in a promising market. If it fails, London risks repeating the problems that have plagued its nuclear sector for decades: delays, escalating costs, dependence on foreign capital, and further erosion of public trust. The Wylfa project is a test case on which the UK's economic revival either begins or falters.

NOTES

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[8] Gardner, Timothy and Kalia, Katha, "US strikes $80 billion deal for new nuclear power plants", 28/10/2025, https://www.reuters.com/business/energy/westinghouse-electric-cameco-corp-brookfield-asset-management-80-bln-nuclear-2025-10-28/

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